

Monthly

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Current Affairs

September 2023



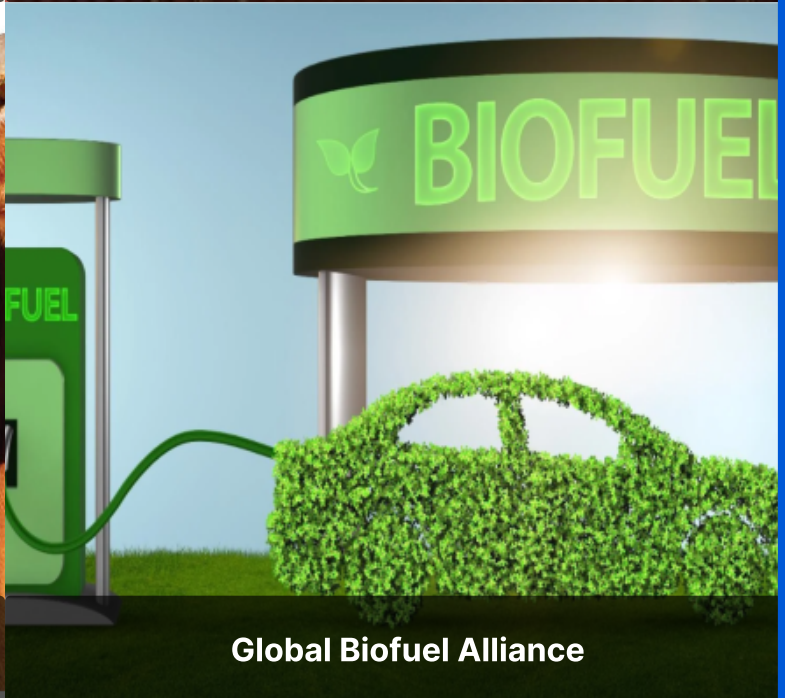
Santiniketan And Three Hoysala Temples Declared World Heritage Sites



G20 Summit 2023



Methane Emissions in Livestock and Rice Systems: A Report Published by FAO



Global Biofuel Alliance

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Constitution, Polity & Governance (GS Paper Prelims) & GS Paper II (Main)

Need For Debate On The Basic Structure Of The Constitution #Basic_Structure_Doctrine

Priority: High 

Primary Source: The Hindu

Relevance: Indian Constitution—historical underpinnings, evolution, features, amendments, significant provisions and basic structure.

Prepp Prelims Booster: Kesavananda Bharati verdict, Basic Structure Doctrine

Prepp Mains Booster: Role and Criticism of Basic Structure Doctrine

Context

- Former Chief Justice of India Ranjan Gogoi's recent remarks in Parliament questioning the "**Basic Structure Doctrine**" of the Indian Constitution have sparked important legal and political discussions.
- This article explores the controversial nature of the doctrine and its implications for the functioning of Indian democracy.

Basic Structure Doctrine:

- In **Kesavananda Bharti Case 1973** ((It is officially known as the Kesavananda Bharati Sripadagalvaru and Ors. v. State of Kerala and Anr., decided by the Supreme Court of India on April 24, 1973.)) the Supreme Court overruled its judgment in the **Golak Nath Case**. It upheld the validity of the **24th Amendment Act** and stated that Parliament is empowered to abridge or take away any of the Fundamental Rights.
- "Basic Structure Doctrine" asserts that Parliament cannot alter the fundamental structure of the Constitution through amendments.
- The doctrine does not provide an exclusive list of what constitutes the "basic features," leaving it to the judiciary to decide on a case-by-case basis.
- The Supreme Court, in a historic decision, ruled that while the Indian Parliament had the power to amend the Constitution under **Article 368**, it did not have the power to alter, amend, or destroy the "**basic structure**" of the Constitution.

Historical Background

Sankari Prasad Judgment 1951:

- judiciary was of the view that the amendment power of the parliament is unrestricted
- Golak Nath Vs State of Punjab 1967:
- The Supreme Court adopted a new vision to see the powers of parliament that it cannot

amend Part III of the constitution i.e. Fundamental rights and thus awarded fundamental rights a "Transcendental Position".

Keshavanada Bharti Vs State of Kerala 1973:

- It gave birth to the landmark judgment which pronounced that the parliaments cannot alter or disturb the basic structure of the constitution

Indira Nehru Gandhi v. Raj Narain

- In this case, the Supreme Court invalidated a provision of the **39th Amendment Act (1975)** which kept the election disputes involving the Prime Minister and the Speaker of Lok Sabha outside the jurisdiction of all courts.
- As per the court, this provision was beyond the amending power of Parliament as it affected the basic structure of the constitution.

Minerva Mills vs. Union of India:

- In the Minerva Mills case, the Supreme Court held that 'the Indian Constitution is founded on the bedrock of the balance between the Fundamental Rights and the Directive Principles.
- The Parliament can amend the Fundamental Rights for implementing the Directive Principles, so long as the amendment does not damage or destroy the basic structure of the Constitution.

The 'basic structure' doctrine has since been interpreted to include -

- The supremacy of the Constitution,
- The rule of law,
- Independence of the judiciary,
- Doctrine of separation of powers,
- Sovereign democratic republic,
- The parliamentary system of government,
- The principle of free and fair elections,
- Welfare state, etc.

An example of the application of basic structure is the SR Bommai case (1994)

In this case the Supreme Court upheld the dismissal of BJP governments by the President following **the demolition of the Babri Masjid**, invoking a threat to secularism by these governments.

The Role of the Basic Structure Doctrine:

- **Prevents Arbitrary Amendments:** It effectively limits the powers of political authorities by

safeguarding the Constitution's core principles from arbitrary amendments.

- **Helps in maintaining Constitutional Integrity:** This doctrine empowers the Supreme Court to ensure the wise exercise of constitutional powers, preventing potential abuses while maintaining the Constitution's integrity.
- **Maintaining constitutional boundaries:** It firmly establishes the Court's authority in determining whether amendments respect the law and constitutionally defined boundaries.
- Furthermore, it emphasizes the rule of law, demanding that decision-making and discretion always conform to the Constitution, while recognizing the importance of respecting longstanding constitutional conventions and practices.

Impact on Indian Democracy:

- The doctrine's elevation of "**due process**" over "**procedure established by law**" impacts the legislative process.
- The sacrosanct nature of the doctrine places it beyond political influence.
- The debate over the doctrine's legitimacy intersects with crucial questions about fundamental rights, their amendability, and who has the final say on their application.

Controversy and Concerns:

- Critics argue that the doctrine represents a judicial coup against the authority of Parliament and the executive.
- They contend that it hinders pro-people policies and departs from the original constitutional principles.
- The doctrine's vagueness leads to an expanding list of off-limits areas for the executive, limiting its ability to govern effectively.

Conclusion

- The "basic structure doctrine" has ignited debates over its legitimacy and impact on Indian democracy.
- While some view it as a necessary safeguard against potential abuses, others criticize it as a hindrance to effective governance.
- The debate highlights the need for an open and fact-based discourse in Indian politics, emphasizing the importance of a functioning and autonomous Parliament in upholding democratic values.

PYQs:

Q: "Parliament's power to amend the Constitution is limited power and it cannot be enlarged into absolute power." In light of this statement

explain whether Parliament under Article 368 of the Constitution can destroy the Basic Structure of the Constitution by expanding its amending power?

(2019)

Q: With reference to the Constitution of India, consider the following statements: (2019)

1. No High Court shall have the jurisdiction to declare any central law to be constitutionally invalid.
2. An amendment to the Constitution of India cannot be called into question by the Supreme Court of India.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (d)

PM Inaugurates Vishwakarma Scheme, Says Government Is Committed To The Uplift Of The Marginalised #Important_Schemes

Priority: High



Primary Source: The Hindu

Relevance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation, Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment. Inclusive growth and issues arising from it.

Prepp Prelims Booster: PM Vishwakarma scheme

Prepp Mains Booster: Measures, Significance

Context

- Recently, Prime Minister Narendra Modi launched the Pradhan Mantri Vishwakarma Yojana (PMVY) to empower and uplift traditional artisans and craftspeople in India.
- During the same event, he inaugurated the first phase of 'Yashobhoomi,' a massive India International Convention and Expo Centre in Dwarka, New Delhi, and unveiled 18 customized stamp sheets representing the 18 traditional trades covered by the PMVY.

What is the PM Vishwakarma Scheme?

- The Pradhan Mantri Vishwakarma Yojana (PMVY) is a comprehensive scheme designed to provide holistic support to traditional artisans and craftspeople to enhance the quality and scale of their services and products.

Objectives of PMVY:

- **Recognition:** PMVY aims to recognize artisans and craftspeople as 'Vishwakarma.'
- **Skill Enhancement:** It provides opportunities for skill upgrading and suitable training.
- **Modern Tools:** The scheme supports the acquisition of better and modern tools to enhance capability, productivity, and product quality.
- **Credit Support:** PMVY ensures access to collateral-free credit and reduces the cost of credit through interest subvention.
- **Digital Empowerment:** The scheme incentivizes digital transactions to empower artisans digitally.
- **Market Opportunities:** It creates new growth opportunities by offering platforms for brand promotion and market linkages.



Eligibility and Trades:

- Eligible beneficiaries include artisans or craftspeople engaged in any of the 18 family-based traditional trades within the unorganized sector or self-employment.
- Beneficiaries must be at least 18 years old, and registration and benefits are limited to one member per family.
- Government employees and their family members are ineligible to participate.

The 18 Trades Covered by PMVY:

- **Wood-Based:** Carpenter (Suthar), Boat Maker
- **Iron/Metal/Stone-Based:** Armourer, Blacksmith (Lohar), Hammer and Tool Kit Maker, Locksmith, Sculptor (Moortikar, stone carver), Stone Breaker, and manufacture of Bronze, Brass, Copper, Dias, Utensils, Figurines, etc.
- **Gold/Silver-Based:** Goldsmith (Sunar)
- **Clay-Based:** Potter (Kumhaar)
- **Leather-Based:** Cobbler (Charmakar)/Shoemaker/Footwear Artisan
- **Architecture/Construction:** Mason (Raajmistri)
- **Others:** Basket/Mat/Broom Maker/Coir Weaver, Doll & Toy Maker (Traditional), Barber (Naai),

Garland Maker (Malakaar), Washerman (Dhobi), Tailor (Darzi), and Fishing Net Maker.

Benefits of PMVY:

- **Recognition:** Beneficiaries receive a certificate and ID card recognizing them as Vishwakarmas.
- **Skilling:** They undergo skill verification and receive 5-7 days of basic training, followed by the option for 15 days of advanced training, with a stipend of ₹500/day during training.
- **Toolkit Incentive:** Beneficiaries receive a grant of ₹15,000.
- **Credit Support:** Collateral-free enterprise development loans worth ₹1 lakh and ₹2 lakh are available, with favorable interest rates and government-backed credit guarantees.
- **Incentivization:** Beneficiaries earn incentives for digital transactions, up to ₹1 per transaction for a maximum of 100 transactions per month.
- **Marketing Support:** The National Committee for Marketing (NCM) provides Quality Certification, Branding, E-commerce linkage, Trade fair advertising, and more.

Significance of PMVY

- **Insufficient Training:** Traditional craftsmen often rely on familial relationships for learning, lacking professional training and access to modern tools.
- **Lack of Capital:** Artisans struggle with the lack of capital for investment in tools, facilities, and raw materials.
- **Marketability:** Rural artisans often lack awareness of marketing techniques and face geographic challenges in reaching markets.
- **Skills Preservation and Succession:** The scheme helps preserve traditional skills and pass them on to the next generation.
- **Financial Stability:** Traditional crafts often involve irregular income patterns due to seasonal demand or market fluctuations.
- **Cultural Heritage:** PMVY contributes to preserving India's rich cultural heritage by supporting traditional crafts and skills.

- The scheme is aptly named after **Vishwakarma, a revered figure in Hindu mythology known as the architect of the gods.**
- Vishwakarma, the divine craftsman, was responsible for creating weapons, cities, and chariots used by the gods.
- He is considered the patron deity of workers, artisans, and artists.

PYQs

1. "Demographic Dividend in India will remain only theoretical unless our manpower becomes more educated, aware, skilled, and creative." What measures have been taken by the government to enhance the capacity of our population to be more productive and employable? **(UPSC GS2 2016)**

2. Are our traditional handicrafts doomed to a slow death? **(UPSC PAPER-I (Essay) 2009)**

Q: With reference to Pradhan Mantri Kaushal Vikas Yojana, consider the following statements:

1. It is the flagship scheme of the Ministry of Labour and Employment.
2. It, among other things, will also impart training in soft skills, entrepreneurship, financial and digital literacy.
3. It aims to align the competencies of the unregulated workforce of the country to the National Skill Qualification Framework.

Which of the statements given above is/are correct? **(UPSC CSE 2018)**

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

Answer: (c)

Q: Rashtriya Garima Abhiyaan' is a National campaign to: (2016)

- a) Rehabilitate the homeless and destitute persons and provide them with suitable sources of livelihood.
- b) Release the sex workers from their practice and provide them with alternative sources of livelihood.
- c) Eradicate the practice of manual scavenging and rehabilitate the manual scavengers
- d) Release the bonded labourers from their bondage and rehabilitate them

Answer: (c)

As Parliament Turns 75, The Story Of Its 'Backbone' - The Secretariat #Indian_Parliament

Priority: High 

Primary Source: The Indian Express

Relevance: Parliament and State legislatures—structure, functioning, the conduct of business, powers & privileges and issues arising out of these.

Prepp Prelims Booster: Parliamentary secretariate

Prepp Mains Booster: Functions and significance of Parliamentary Secretariat

Context

- As India's Parliament marks its 75-year journey, it is essential to recognize the vital role played by the Parliament Secretariat.
- The Secretariat serves as the backbone of Parliament, providing support, advice, and ensuring the smooth legislative functioning.

The Parliament Secretariat: A Pillar of Support

- The Parliament Secretariat is an autonomous entity that operates behind the scenes to facilitate the functioning of India's legislative bodies.
- Each house of Parliament has its own dedicated secretarial staff, with recruitment and service conditions regulated by Parliament.
- The Secretariat of each house is headed by a Secretary General, a permanent officer.
- The constitutional basis for the Secretariat is found in Article 98 of the Indian Constitution.

Vithalbhai Patel's Vision for a Dedicated Secretariat

- **Legislative Independence Advocacy:** Vithalbhai Patel, in 1925, became the first elected Speaker of the Central Assembly. He advocated for a separate legislative secretariat to ensure independence and direct control over its staff.
- **Push for Legislative Security:** Patel also pushed for a dedicated security establishment for the legislature, asserting that Assembly precincts fell under the Speaker's authority.
- **Stand-Off After Central Assembly Bombing:** In 1929, after Bhagat Singh and Batukeshwar Dutt threw bombs into the Central Assembly, the British administration sought to place police officers to control access to the Parliament building. Patel opposed this move, asserting it infringed upon the Speaker's authority.
- **Establishment of Legislative Autonomy:** Patel's persistence led to the creation of a separate legislative office in 1929, independent of the government.
- **Emergence of Specialized Parliament Staff:** Patel's efforts laid the foundation for specialized Parliament staff, ensuring legislative autonomy.

The Role of Parliamentary Reporters in Ensuring Transparency

- Parliamentary reporters play a vital role in ensuring transparency and accountability in parliamentary proceedings.
- They are responsible for documenting and publishing speeches, statements, and observations made by Members of Parliament (MPs) during sessions.

- The history of parliamentary reporting in India dates back to 1861, driven by the need for accurate reports to counter negative impressions among the native population.

Evolution of Reporting:

- **Early Reports:** Initially, reporters produced "abstracts of members' observations" providing summaries of what was said.
- **Introduction of Shorthand:** Shorthand writing improved efficiency and accuracy, leading to the transition from "abstract of observation" to "abstract of proceedings."
- **Verbatim Records:** By 1921, reporters began keeping verbatim records of parliamentary proceedings, ensuring every word spoken by MPs was accurately documented.

Maheshwar Nath Kaul's Contributions to Professionalizing the Secretariat

- M.N. Kaul, a lawyer by profession, played a pivotal role in professionalizing the Parliament Secretariat.
- His journey began in 1937 when he joined the legislative assembly office.

Significant Contributions:

- **Role in the Constituent Assembly:** During his tenure as the secretary of the Constituent Assembly, Kaul shaped constitutional provisions related to legislatures, aligning them with democratic principles and the parliamentary system.
- **Post-Independence Contributions:** After India gained independence, Kaul assumed charge of the Lok Sabha Secretariat, continuing his mission to strengthen parliamentary institutions.
- **Creation of Parliament's Research and Reference Service:** Kaul initiated the establishment of this service, providing lawmakers with comprehensive information for informed discussions on bills and other topics.
- **Advocating for Separate Buildings:** In 1956, Kaul embarked on a plan to secure separate buildings for various parliamentary functions, reflecting his commitment to modernize and professionalize the Indian parliamentary system.

Evolution of Simultaneous Interpretation Services and Structuring of Parliament Secretariats

- In the Lok Sabha, simultaneous interpretation services were a long-standing demand but were delayed due to a shortage of trained personnel.
- In 1964, the Parliament Secretariat introduced real-time interpretation services in Hindi and

English, addressing language barriers and enhancing the parliamentary process.

- The demanding task of interpretation requires proficiency in vocabulary, grammar, language nuances, literature, idioms, and humor.
- Currently, the Parliament Secretariat provides simultaneous interpretation in 22 languages to assist Members of Parliament.
- In 1974, a committee of MPs recommended the restructuring of Lok Sabha and Rajya Sabha secretariats into 11 functional areas.
- These areas included legislative, library research and information, verbatim reporting, editorial and translation, interpretation, printing and publication, and watch and ward (later renamed Parliament Security) services.
- Administrative consolidation streamlined the functions and responsibilities of secretariat officers, totaling around 2,200 in Lok Sabha and 1,500 in Rajya Sabha.

Role of Secretary General

- Secretary Generals in Lok Sabha and Rajya Sabha are appointed by the respective presiding officers, providing them with a significant role in the selection process.
- **Constitutional and Statutory Advisers:** Secretary Generals serve as advisers to the presiding officers, aiding them in fulfilling their constitutional and statutory responsibilities.
- **Advising on House Matters:** They provide advice on various matters related to the functioning of the House and its committees, ensuring the smooth conduct of parliamentary affairs.
- **Administrative Leadership:** As the head of the respective secretariats, Secretary Generals oversee the administration of the House and its secretariat.

Conclusion

- The Parliament Secretariat, with its autonomous structure and dedicated professionals, plays a pivotal role in the functioning of India's Parliament.
- Figures like Vithalbhai Patel and Maheshwar Nath Kaul have left an indelible mark on the evolution of the Parliament Secretariat, professionalizing its operations and enabling it to support the Indian legislative process effectively.
- Today, the secretariat continues to be the unsung hero of Indian democracy, providing crucial support to the functioning of both Houses of Parliament.

Lok Sabha Secretariat:

- The Speaker of the Lok Sabha guides the Lok Sabha Secretariat, an independent entity.
- Assisting the Speaker in their constitutional and statutory duties are the Secretary-General, Additional Secretary, Joint Secretary, and other staff.
- The Secretary-General retires at 60, is accountable solely to the Speaker, and holds exclusive authority in summoning members during the Speaker's absence and authenticating bills on the President's behalf.

Rajya Sabha Secretariat:

- Established under Article 98 of the Constitution, the Rajya Sabha Secretariat operates under the Chairman's purview.
- It offers secretarial support to the Rajya Sabha, serves members, manages Parliamentary Committees, conducts research, handles personnel matters, and documents daily proceedings.



Yashobhoomi: A Beacon of Progress

- The 'Yashobhoomi' Convention Center in Dwarka, New Delhi, is a colossal facility designed to tap into India's burgeoning conference tourism sector.
- With a vast project area of over 8.9 lakh square meters and a built-up area exceeding 1.8 lakh square meters, it is one of the world's largest MICE facilities.
- Equipped with a comprehensive ecosystem for organizing conferences and exhibitions, it will be seamlessly connected to the Delhi Airport Metro Express line for easy access.
- Yashobhoomi Convention Center is expected to create numerous job opportunities, contributing to India's progress and development.

Q: Which of the following is/are the function/functions of the Cabinet Secretariat?
(UPSC CSE 2014)

1. Preparation of agenda for Cabinet Meetings
Secretarial assistance to Cabinet Committees
2. Allocation of financial resources to the Ministries

Select the correct answer using the code given below:

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

Answer: (c)

Newly Suggested Prison Reforms #Prison_Reforms #Important_Schemes

Priority: High



Primary Source: The Hindu

Relevance: Government policies and interventions for development of vulnerable sections; Important aspects of governance.

Prepp Prelims Booster: Prison-Conditions, Infrastructure and Reforms' Report

Prepp Mains Booster: Prison Reforms, related Commissions Recommendations

Context

- The Parliamentary Committee on Home Affairs, under the leadership of Rajya Sabha member Brij Lal, recently presented the 'Prison-Conditions, Infrastructure and Reforms' Report.
- This committee is also tasked with reviewing three significant bills aimed at replacing British-era criminal laws, including the Indian Penal Code (1860), the Code of Criminal Procedure (1898), and the Indian Evidence Act (1872).

Key Recommendations:

States with Overcrowded Prisons:

- The committee highlighted the issue of densely populated prisons in Uttar Pradesh, Bihar, Madhya Pradesh, Maharashtra, Punjab, and Haryana, collectively accommodating over 50% of India's prison population.
- The report recommends the construction of prisons in other states to alleviate overcrowding in these regions.

Special Provisions for Female Prisoners:

- Women prisoners can now reside with their children until the age of 12, as opposed to the previous limit of 6 years.
- According to the Prison Statistic Report 2021 by the National Crime Record Bureau (NCRB), there were 1,650 women prisoners with 1,867 children in jails across the country as of December 31, 2021.

Prisoner Transfers:

- To address overcrowding, the committee suggests transferring prisoners from crowded jails to those with available cells within the same

state or to jails in other states by signing Memorandums of Understanding (MoUs).

Creation of a Separate Cadre for Prison Officials:

- The panel recommends establishing a distinct cadre of prison officials for Union territories, allowing for regular transfers. This approach aims to disrupt the nexus between inmates and jailers.

Special Considerations for Transgender Individuals:

- The report suggests ensuring separate barracks or wards for transmen and transwomen. When transgender inmates enter prison, a doctor of their choice should be assigned to determine their gender.

Enhancements for Individuals on Bail:

- The committee proposes using ankle trackers or bracelets on prison inmates to facilitate the granting of bail and reduce prison overcrowding.
- According to NCRB prison statistics for 2021, India has 1,319 prisons with a total capacity of 425,609 prisoners.

Additional Recommendations:

- To uphold the right to privacy and dignity, the report advocates for separate toilets and bathing facilities for such prisoners.

Issues with Indian Prisons:

- **Overcrowded Jails:** Many Indian prisons face severe overcrowding, such as Delhi's Tihar Jail, which housed over 15,000 offenders despite a capacity of approximately 7,000 inmates.
- **Under-trials:** The 'Justice India Report 2022' indicates that 77% of prisoners are undertrials, often due to pending cases.
- **Custodial Violence:** Cases of brutal physical treatment in custody by police officials persist as a major issue.
- **Staff Shortages:** India's prisons operate with at least a 33% staff shortage, particularly at the officer and correctional staff levels.
- **Infrastructure Gaps:** Basic facilities like sleeping quarters, washrooms, and health clinics are often lacking.
- **Hygiene Concerns:** Indian prisons are notorious for their unhygienic conditions, leading to the spread of diseases.
- **Custodial Violence:** Custodial violence remains a critical issue, with 6,623 inmates suffering from mental illnesses in 2018.

What is NCRB?

- The National Crime Records Bureau (NCRB) serves as a repository of information on crime and criminals.
- It was established in 1986 based on recommendations from the Tandon Committee

to the National Police Commission (1977–1981) and the MHA's Taskforce (1985).

Government Initiatives:

- The Ministry of Home Affairs has introduced the 'Model Prisons Act 2023' to replace the outdated Prisons Act of 1894.
 - This aims to improve prison management, focusing on convict reformation and rehabilitation.
- Additionally, initiatives like the Modernisation of Prisons (MoP) Project, E-Prisons, Model Prison Manual 2016, Fast Track Courts, and e-Courts aim to modernize the prison system, enhance efficiency, and streamline legal processes.

Justice V. R. Krishna Iyer Committee (1987):	<ul style="list-style-type: none"> • Suggested separate institutions for women prisoners staffed exclusively by women employees. • Advocated provisions to maintain the dignity of women offenders. • Called for increased recruitment of women in the police force.
All India Committee on Prison Reforms / Justice Mulla Committee (1983):	<ul style="list-style-type: none"> • Recommended creating an All India cadre for prison staff and bringing prisons under the concurrent list. • Urged the government to establish a National Policy on Prisons. • Proposed the use of alternatives to imprisonment, such as community service. • Emphasized the need for proper accommodations in prisons for clothing, hygiene, food, and ventilation. • Advocated regular public and media visits to correctional facilities to improve conditions and support rehabilitation efforts.
Committee under the Director General, Bureau of Police Research	<ul style="list-style-type: none"> • Built upon the recommendations of the Justice Mulla and Justice Krishna Iyer Committees.

and Development (BPR&D) (2005):	<ul style="list-style-type: none"> Developed a National Policy on Prison Reforms and Correctional Administration in 2007.
Justice Amitava Roy Panel on Prison Reforms (2018):	<ul style="list-style-type: none"> Recommended establishing special fast-track courts for minor offenses. Called for maintaining a lawyer-to-prisoner ratio of 1:30. Advocated using video-conferencing for trials. Suggested allowing new prisoners a free daily phone call to family members during their first week in jail. Explored alternative punishments and the release of minor crime suspects on a Personal Recognizance Bond if unable to secure surety for bail.

Key Facts:

Under Entry 4 of List II (State List) in the 7th Schedule of the Indian Constitution, "prison" and "persons confined inside" are State Subjects.

State governments are responsible for the management and administration of prisons.

PYQs:

Consider the following statements:

Statement-I: In India, prisons are managed by State Governments with their own rules and regulations for the day-to-day administration of prisons.

Statement-II: In India, prisons are governed by the Prisons Act, 1894 which expressly kept the subject of prisons in the control of Provincial Governments. Which one of the following is correct in respect of the above statements?

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct

Answer: (a)

Women's Reservation Bill Passed By The Parliament #Important_Bills

Priority: High**Primary Source:** The Hindu

Relevance: Role of women and women's organization; Parliament and State legislatures—structure, functioning, conduct of business, powers & privileges and issues arising out of these.

Prepp Prelims Booster: Women's Reservation Bill

Prepp Mains Booster: Issues Related To Women's Reservation Bill 2023

Context

- The recent passage of the Women's Reservation Bill in the Indian Parliament marks a significant step toward enhancing gender parity in the nation's legislative bodies.
- This bill seeks to provide one-third reservation for women in the Lok Sabha and Legislative Assemblies, addressing the long-standing gender disparity in India's political representation.

Current State of Women's Representation

- As of now, India's ranking in terms of women's representation on the global stage remains low.
- According to data from the Inter-Parliamentary Union, India ranks 141st out of 193 countries in this regard, with only 15% of parliamentary seats held by women.
- Similarly, the annual Gender Gap Report for 2023 places India at 127th out of 146 nations concerning gender parity.

About Women's Reservation Bill

- The 128th Constitutional Amendment Bill of 2023, also known as the Nari Shakti Vandan Adhiniyam, aims to reserve one-third of the seats in the Lok Sabha and state assemblies for women.
- This reservation is set to remain in effect for 15 years, with the possibility of extension by the Parliament.
- While the bill provides a quota for SC/STs within the reserved seats for women, it does not specify a quota for OBCs.
- Seats reserved for women may be allocated through a rotation system among different constituencies in states or union territories.

Significance of the Bill

- The Women's Reservation Bill carries immense significance for the nation. It can contribute to national development by ensuring that women play a more prominent role in politics.

- Moreover, countries with a higher proportion of women in national parliaments are more likely to pass and implement gender-sensitive legislation, thereby fostering gender equality.
- This cascading impact extends to local governance, with an increase in female representation leading to enhanced responsiveness to crucial issues like infrastructure, sanitation, and more.

Implementation of the Bill

- The implementation of the Women's Reservation Bill depends on the delimitation process, which is based on the first Census conducted following the bill's passage.
 - This is projected to occur around 2029.
- The bill stipulates a 15-year duration for women's reservation, with provisions for extension if required.
- The rotation of reserved seats for women will follow subsequent delimitation exercises, to be determined by Parliament through legislation.

Journey of Women's Reservation Bill

- The Women's Reservation Bill has had a long and arduous journey. It was initially introduced in the Lok Sabha in 1996 and faced numerous setbacks.
- It was reintroduced multiple times in the following years but struggled to garner the necessary support.
- Despite being passed in the Upper House in 2010, the bill could not make its way into the Lok Sabha due to political pressures.

Status of India's Representation of Women Parliamentarians

- As of now, women represent nearly 15% of the Lok Sabha, and their representation is below 10% in many State Assemblies. India ranks low in global gender parity indices.

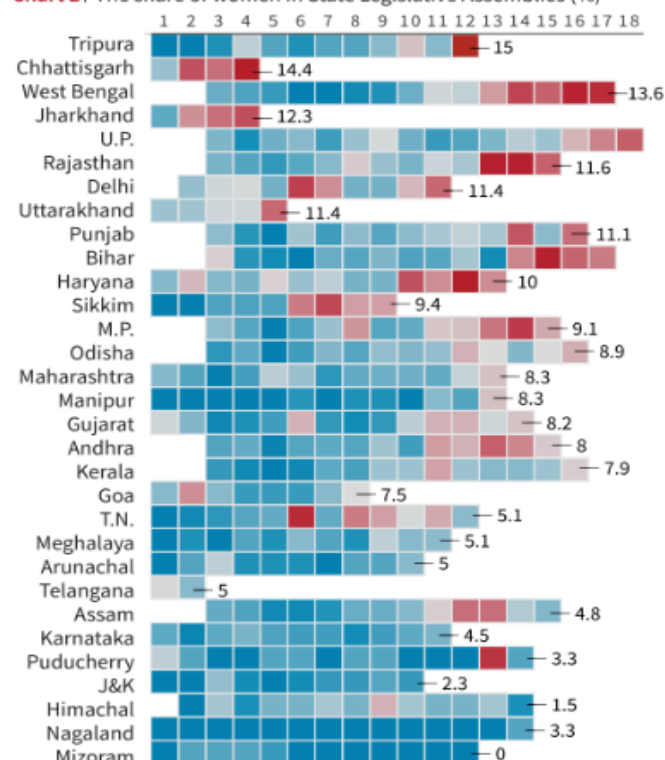
Share of Women Members in Lok Sabha

- Throughout over seven decades of India's electoral history, the share of women parliamentarians has never exceeded 15%.
- The 2019 general election saw women's representation drop even lower when considering their share of total candidates—just 9%.

Share of Women in State Legislative Assemblies

- State legislative assemblies often have a lower share of women MLAs, with only Tripura reaching the 15% mark.
- Many states, including Andhra Pradesh, Goa, Gujarat, and Maharashtra, have less than 10% women representation.

Chart 21 The share of women in State Legislative Assemblies (%)



Increasing Women's Participation in Governance

- The introduction of reservations for women in local body elections has positively impacted their participation in governance.
- Studies show that elected women representatives have increasingly asserted their influence over time.
- This success can serve as a model for higher elected bodies, such as state legislative assemblies and the Parliament.

Challenges in Implementation

- The successful implementation of the Women's Reservation Bill is contingent on several factors.
 - Delimitation, which has been frozen since 1976, may lead to varying implications for states based on their women's empowerment indicators.
 - Questions about the legality of the bill's contingent provisions remain.
 - Additionally, concerns about capacity building and the absence of a specific quota for OBC women need to be addressed.

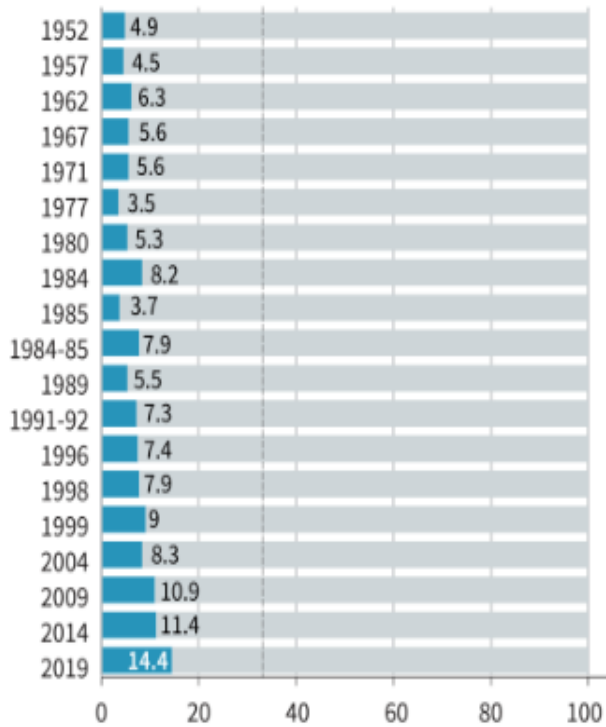
Societal Transformation

- Besides legislative reforms, it is crucial to transform societal attitudes regarding gender roles to achieve gender justice.
- The disproportionate burden of unpaid care work should be redistributed among all family members to ensure gender equality.

Magalir Urimai Thogai Scheme

- The Tamil Nadu government's Magalir Urimai Thogai scheme, a monthly cash transfer program, aims to recognize the unquantified contributions of women in both domestic and external work, improving their livelihood and status.

Chart 1 | The share of women members in the Lok Sabha (%)



Way Forward

- India can adopt capacity-building initiatives, inspired by global models like the U.S.A.'s EMILYs List.
- The government should play a more active role in building the capacity of women representatives, and institutions like the National Commission for Women and the Parliamentary Committee on Empowerment of Women need to be redefined and strengthened.

Conclusion

- The Women's Reservation Bill marks a significant stride in addressing gender inequality in Indian politics.
- However, its success hinges on overcoming implementation challenges, changing societal attitudes, and building the capacity of women representatives.
- Achieving gender equality requires comprehensive efforts, encompassing legislative reforms, distribution of unpaid labor, and transforming societal mindsets.

Mains:

Q: Though women in post-independent India have excelled in various fields, the social attitude towards women and the feminist movement has been patriarchal." Apart from women's education and women empowerment schemes, what interventions can help change this milieu? (**UPSC GS2 2021**)

Q: Demographic Dividend in India will remain only theoretical unless our manpower becomes more educated, aware, skilled, and creative." What measures have been taken by the government to enhance the capacity of our population to be more productive and employable? (**UPSC GS2 2016**)

Prelims:

Q: To obtain the full benefits of demographic dividend, what should India do? (UPSC CSE 2013)

- Promoting skill development
- Introducing more social security schemes
- Reducing infant mortality rate
- Privatization of higher education

Answer: (a)

Q: Which of the following gives the 'Global Gender Gap Index' ranking to the countries of the world? (**UPSC CSE 2017**)

- World Economic Forum
- UN Human Rights Council
- UN Women
- World Health Organization

Answer: (a)

AFSPA extended in Manipur for 6 months #AFSPA #Important_Acts

Priority: High



Primary Source: The Hindu

Relevance: Role of external state and non-state actors in creating challenges to internal security, Challenges to internal, Various Security forces and agencies and their mandate

Prepp Prelims Booster: Armed Forces (Special Powers) Act Provisions

Prepp Mains Booster: Provisions, Criticism of AFSPA, Various Commissions Recommendations

Context

- The Manipur government extended the **Armed Forces (Special Powers) Act (AFSPA)** throughout the state on September 27.
- The Act's "**disturbed area**" status remains in effect in all hill districts, predominantly inhabited by tribal communities.

About AFSPA:

- **The Armed Forces (Special Powers) Act (AFSPA) of 1958** is a parliamentary act that grants the armed forces the authority to maintain public order in "**disturbed areas**."
- Currently, **AFSPA applies to 31 districts across four Northeastern states, with partial applicability in an additional 12 states such as Jammu and Kashmir, Nagaland, Assam, Arunachal Pradesh, and Manipur.**

Major Provisions under the Act:

- Both state and Union governments can issue AFSPA notifications.
- It empowers the **military, state, and police forces** to employ lethal force, conduct house searches, and demolish properties likely to be used by insurgents in regions designated as "disturbed."
- **Section 3** allows the Central government to deploy the military to support civilian authorities, given the state's governor issues an official announcement in the Gazette of India.
- **Section 4** provides extraordinary authority to army officers in troubled areas, granting them the power to fire (even fatally) upon those breaking or suspected of breaking the law, with a warning being the sole prerequisite.
- Security forces can detain individuals without a warrant and conduct searches without permission.

Disturbed Area:

- A disturbed area is declared through a notification in compliance with Section 3 of the AFSPA. **Conflicts or disputes between various religious, ethnic, linguistic, regional groups, castes, or communities can render an area "disturbed."**
- The **Central Government, the State's Governor, or the Union Territory's Administrator may proclaim an entire state or union territory as a disturbed area.**

AFSPA in Various States:

- **Assam:** Assam was the first state to come under AFSPA in 1958, with the entire state under the Act since November 1990, primarily due to rising ULFA activities.
- **Jammu & Kashmir:** AFSPA has been in force in J&K since July 5, 1990, empowering security forces with the authority to conduct operations and make arrests without a warrant.
- **Tripura:** The Act was imposed in Tripura in 1997 during heightened terrorism along the Bangladesh border. AFSPA was lifted in May 2015.

- **Manipur:** Manipur was declared a "disturbed area" in 1980 to combat four insurgent groups active at that time.
- **Arunachal Pradesh:** Three districts and 16 police station areas are considered "**disturbed zones**." In March 2022, the AFSPA was extended in three Arunachal Pradesh districts.
- **Meghalaya:** AFSPA was removed from Meghalaya in 2018 due to a decrease in insurgency-related incidents.
- **Mizoram:** The **Mizoram Peace Accord of 1986** ended the insurgency in the state.
- **Nagaland:** The AFSPA has been in effect for several decades, applicable to the entire state. A phased withdrawal began on April 1, 2022, covering about 25% of the state's land area.

Criticism of AFSPA:

- The use of force to suppress popular movements has further **alienated Northeastern communities**.
- Security personnel operating under AFSPA sometimes **encroach upon the jurisdiction of state security agencies**.
- The power of **arbitrary arrest and detention** by the armed forces violates fundamental rights established under **Article 22**, safeguarding against preventive and punitive detentions.
- AFSPA **often breaches international agreements like the Universal Declaration of Human Rights (UDHR), the International Covenant on Civil and Political Rights (ICCPR), and the Convention Against Torture**

Conclusion

- This extension of AFSPA in Manipur raises concerns about the impact of the Act on civil liberties and human rights in the region, highlighting the ongoing debate over its necessity and its implications for the affected communities.

PYQ:

Q: Human rights activists constantly highlight the view that the Armed Forces (Special Powers) Act, 1958 (AFSPA) is a draconian act leading to cases of human rights abuses by the security forces. What sections of AFSPA are opposed by the activists? Critically evaluate the requirement with reference to the view held by the Apex Court. **(UPSC GS3 2015).**

[Different Committees' & Their recommendations on AFSPA](#)

The Justice Verma Committee (2012):

- On December 23, 2012, a three-member committee headed by Justice J.S. Verma, former Chief Justice of the Supreme Court, was constituted to recommend amendments to the Criminal Law so as to provide for quicker trial and enhanced punishment for criminals accused of committing sexual assault against women
- It showed concerns how the Armed Forces Special Powers Act legitimizes the immunity against sexual violence against women.
- Verma committee suggested changes to the criminal law to allow people convicted of sexual assault against women to be tried more quickly and receive harsher punishments.

The Justice Jeevan Reddy Committee (2004):

- The Union Government appointed a five-member committee led by Justice B. P. Jeevan Reddy in November 2004 to review the various provisions of the AFSPA.
- The committee observed that the law had become "a symbol of oppression, an object of hate and an instrument of discrimination and high-headedness" and suggested that the act should be repealed.
- However, it recommended that essential provisions of the Act be inserted into the Unlawful Activities (Prevention) Act of 1967

Justice Santosh Hegde Commission (2013):

- In 2013, a committee headed by Supreme Court Judge Santosh Hegde was appointed to review the encounter killing of 1528 people in Manipur since 1979.
- The commission observed that there was a lack of enforceable safeguarding rights at the root level against the "sweeping powers" given to the armed forces.

All Reported Births, Deaths To Be Digitally Registered From October 1 #Important_Legislations

Priority: Medium



Primary Source: The Hindu

Relevance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation

Prepp Prelims Booster: Registration of Births and Deaths (Amendment) Act 2023

Prepp Mains Booster: Features, Significance & Challenges related to Registration of Births and Deaths (Amendment) Act 2023

Context

- The Indian government recently announced the digital registration of all births and deaths across the country.
- The **Registration of Births and Deaths (Amendment) Act, 2023**, will come into effect on October 1st, 2023.
- This centralized database will update the **National Population Register (NPR)**, ration cards, property registration, electoral rolls, and more.

The Registration of Births and Deaths (Amendment) Act 2023

- The Registration of Births and Deaths (Amendment) Act 2023 primarily aims to promote uniformity and comparability in the registration of births and deaths throughout the country.

Key features of the Act:

- **Hierarchy of Registrars:** The Registrar General of India holds authority over births and deaths at the central level, with Chief Registrars at the state level, District Registrars at the district level, and Registrars at the local level.
- **Centralized Databases:** States and Union Territories are required to maintain individual databases under the control of the Registrar General of India, facilitating the Civil Registration System.
- **Penalties:** Births, stillbirths, and deaths must be registered within 21 days, with violations incurring a ₹5 penalty.

Significance

- **Centralized Registration:** Databases must now be maintained centrally under the Registrar General of India and at the state level under the Chief Registrars.
- **Death Certificate:** Medical institutions are mandated to provide a certificate specifying the cause of death to the Registrar and the nearest relatives. Deaths occurring outside hospitals require certification by the most recent attending medical practitioner.
- **Timely Issuance:** Certificates must be issued within seven days by the registrar to the applicant.
- **Electronic Certificates:** The Amendment allows for the issuance of electronic certificates, replacing extracts from the previous act.
- **Real-time Updates:** The centralized database will be updated in real-time, without human intervention, ensuring 360° surveillance.
- **Interoperability:** This database will update other crucial registers, including the National

Population Register, Electoral Register, Aadhaar, Driving License, Passport, and Ration Card.

- **Digital Birth Certificates:** Digital birth certificates will serve as a comprehensive document for various purposes, including education, driving licenses, passports, Aadhar applications, government jobs, voter enrollment, and marriage registration.
- **Collection of Aadhaar Numbers:** Authorities will collect Aadhaar numbers of parents and family members to facilitate birth and death registrations.
- **Appeals:** Provisions are made for appealing Registrar or District Registrar decisions within 30 days of the action or order, with decisions to be given within 90 days.

Challenges

- **Corruption:** The high illiteracy rates among the population may make individuals vulnerable to exploitation during the registration process.
- **Inaccurate Data:** Instances of nearly 55 lakh voters being deleted due to Aadhaar-voter ID linking raise concerns about data accuracy.
- **State-level Databases:** The need for a national-level database, given the existence of state-level databases, has been questioned.
- **Privacy Concerns:** The amendment's provision for adding databases in the future without parliamentary oversight has raised privacy concerns.
- While birth and death registers are public information and the RBD Act only needs an enabling provision to share information, other databases will require the amendment of laws or executive orders under which they are maintained.

Way Forward

- Efficient data sharing alternatives could involve real-time updating of the central database from state-level databases based on standards set by the Registrar General of India.
- This data could then be made available to authorities maintaining various national databases, balancing modernization with data privacy.

NPR

- The National Population Register (NPR) is a database that lists all usual residents who have resided in a place for six months or more and intend to continue doing so for another six months.
- Registration in the NPR is mandatory for all Indian citizens.

- Aim: Establish a comprehensive identity database of residents in the country.
- The NPR is developed through house-to-house enumeration during the "house-listing" phase of the Census and was first collected in 2010, and updated in 2015.
- This process is guided by the Citizenship Act 1955 and the Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003.
- The NPR streamlines resident data, enhances policy formulation, ensures efficient policy implementation, reduces bureaucratic obstacles, and is not a citizenship enumeration initiative, including foreigners residing in a location for over six months.

PYQs

Mains:

Q: Implementation of information and Communication Technology (ICT) based Projects / Programmes usually suffers in terms of certain vital factors. Identify these factors, and suggest measures for their effective implementation.

(2019)

Q: E-governance is not only about utilization of the power of new technology, but also much about critical importance of the 'use value' of information. Explain. **(2018)**

Economy (GS Paper Prelims) & GS Paper III (Main)

Citing Inflation And WTO Subsidy Limit, NITI, Commerce Red-Flagged MSP Hike #Inflation #WTO_Subsidies_Issue #CACP

Priority: High 

Primary Source: Indian Express

Relevance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation; Issues related to direct and indirect farm subsidies and minimum support prices

Prepp Prelims Booster: MSP

Prepp Mains Booster: Issues Related to Minimum Support Price

Context:

- Recently, the Union Cabinet chaired by Prime Minister Narendra Modi **approved the increase in MSP ranging from 6 per cent to 10 per cent.**
- This move has led to discussions regarding inflation, compliance with **World Trade**

Organization (WTO) obligations, labor shortages, and rising wages.

HOW PRICES MOVED

	CPI Retail Inflation (%)	CFPI* (%)
Jan	6.52	6.00
Feb	6.44	5.95
Mar	5.66	4.79
April	4.70	3.84
May	4.31	2.96
June	4.87	4.55
July	7.44	11.51

*Consumer Food Price Index-based Inflation

What are issues raised by various government departments due to the rise in MSP?

- **Inflation:** It argued that implementing such significant MSP hikes could disrupt efforts to maintain food inflation within the target range of 4-6%, crucial for overall macroeconomic stability.
- **Against current approach:** NITI Aayog raised concerns about the proposed MSP increase, linking it to the 1.5 times projected cost approach. It stated that actual data on some of the cost items shows that the real wages in agriculture are not rising and the increase in price of urea has been absorbed by the Government of India by increasing subsidies, warranting a closer examination of projected costs by **Commission for Agricultural Costs and Prices (CACP)** and the Ministry and CACP at the state level regarding the effects of both price and non-price recommendations.
- **WTO limits:** According to the WTO's Agreement on Agriculture, government procurement of crops at administered prices (MSP in India's case) for food security purposes must be notified to the WTO.
 - Additionally, product-specific support should not exceed 10% of the crop's production value, and a similar limit applies to non-product-specific price support within the agriculture sector.
- **Additional financial burden:** Increased MSP for paddy in the 2023-24 **kharif marketing season (KMS)** would result in an additional financial burden of Rs 13,819.80 crore, contributing to a total implication of Rs 2,12,907.60 crore.
- Similarly, the Investment and Price Support division of the **Ministry of Agriculture and Farmers' Welfare**, projected a financial implication of Rs 126.99 crore due to the higher MSP of pulses and oilseeds.

What are the arguments for rising MSP?

- The government argued that the increase was in line with the Union Budget 2018-19 announcement of fixing MSP at a level of at least 1.5 times the cost of production, aimed at reasonably fair remuneration for farmers.
- **Food security:** An increase in MSP for **Kharif Marketing Season (KMS)** 2023-24 is in the range of 5.3% to 10.4% and is essential to ensure remunerative prices for farmers, encouraging them to invest more in production and ensuring food security in the country.
- Higher MSP for crops such as oilseeds, pulses, and Shree Anna aims to promote crop diversification.
- **Cost Consideration for MSP Determination:** The estimated production cost rise ranges from 6.13% to 10.52% compared to the previous year by the **Commission for Agricultural Costs and Prices (CACP)**
- **Promotion of Agricultural Mechanization:** This scheme aims to expand custom hiring services of agricultural machinery and equipment, fostering farm mechanization and access for small farms. **The Rashtriya Krishi Vikas Yojana (RKVY)** contributes to this effort.

Recommendations by CACP

- CACP highlighted labor scarcity and increasing wages as major issues in Indian agriculture, advocating for farm mechanization to counter labor shortages.
- The commission recommended collective group ownership of machinery through self-help groups, cooperatives, and custom hiring centers to enhance access to expensive farming equipment.
- Furthermore, urgent action is needed to resolve supply-side challenges like storage, warehouse infrastructure, and transportation.

About CACP

- The **Commission for Agricultural Costs and Prices (CACP)**, set up in 1965, is a **decentralized agency of the Government of India (GoI)**.
- It is an expert body that recommends the **Minimum Support Prices (MSPs)** by taking into consideration various factors.

About WTO

- **World Trade Organization (WTO)** is an **international organization set up in 1995 by replacing the General Agreement on Trade**

and Tariffs (GATT) under the Marrakesh Agreement.

- It is the only global international organization dealing with the international Trade between nations.
- **Headquarter:** Geneva, Switzerland.
- Currently, WTO has 164 members and **India is a founding member of WTO.**

Question: In India, which one of the following is responsible for maintaining price stability by controlling inflation? **(UPSC 2022)**

- Department of Consumer Affairs
- Expenditure Management Commission
- Financial Stability and Development Council
- Reserve Bank of India

Answer: (d)

Question: Which of the following factors/policies were affecting the price of rice in India in the recent past? **(UPSC 2020)**

- Minimum Support Price
- Government's trading
- Government's stockpiling
- Consumer subsidies

Select the correct answer using the code given below:

- 1, 2 and 4 only
- 1, 3 and 4 only
- 2 and 3 only
- 1, 2, 3 and 4

Answer: (d)

UPSC Previous Year Mains Question:

- What are the direct and indirect subsidies provided to farm sector in India? Discuss the issues raised by the World Trade Organization (WTO) in relation to agricultural subsidies. **(UPSC GS3 2023)**

Current Account Deficit Widens QoQ To \$9.2 Billion On Higher Trade Deficit #Government_Budgeting #Fiscal_Deficit

Priority: Medium



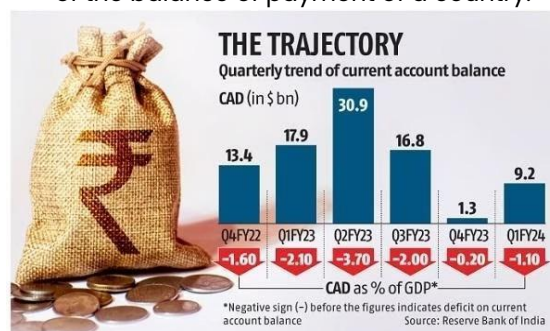
Primary Source: The Hindu

Relevance: Indian Economy and issues relating to planning, mobilization of resources; Growth and Development

Prepp Prelims Booster: Current Account Deficit

Prepp Mains Booster: Issues Related To Current Account Deficit

- Recently, the **data released by the Reserve Bank of India (RBI)** revealed that **India's Current Account Deficit (CAD) expanded significantly to \$9.2 billion, equivalent to 1.1% of GDP, during the April-June quarter.**
- The CAD was \$17.9 billion (2.1% of GDP) in the year-earlier quarter of fiscal 2022-23,
- **Current Account Deficit (CAD)** is a key indicator of the balance of payment of a country.



Key Highlights of RBI's Data

- The widening of CAD on a quarter-on-quarter basis was primarily on account of a higher trade deficit coupled with a lower surplus in net services and decline in private transfer receipts.
 - **Trade deficit** increased sequentially to \$56.6 billion in Q1FY24, up from \$52.6 billion in Q4FY23.
 - **Net services receipts** decreased sequentially, primarily due to a decline in exports of computer, travel and business services, though remained higher on a year-on-year basis.
 - **Private transfer receipts**, mainly representing remittances by Indians employed overseas, moderated to US\$ 27.1 billion in Q1(2023-24) from US\$ 28.6 billion in Q4 (2022-23) but witnessed an increase on a y-o-y basis.
- **Net outgo on the income account**, primarily reflecting payments of investment income, declined to \$10.6 billion in Q1FY24 from \$12.6 billion in Q4FY23.
- **Net foreign direct investment:** In the financial account, net foreign direct investment decreased to \$5.1 billion from \$13.4 billion a year ago.
- **Net foreign portfolio investment** recorded inflows of \$15.7 billion, compared with net outflows of \$14.6 billion in the year-earlier quarter.
- **Net external commercial borrowings** to India recorded an inflow of \$5.6 billion in Q1FY24 as against an outflow of \$2.9 billion a year ago.
- **Non-resident deposits** recorded net inflows of \$2.2 billion as compared with \$0.3 billion in Q1FY23.
- **Foreign exchange reserves** on a Balance of Payments basis increased by \$24.4 billion in the

first quarter of the current fiscal year, up from \$4.6 billion in the previous year.

What is the Current Account Deficit (CAD)?

- The current account **tracks the inflows and outflows of goods, services, and investments** into and out of a country.
- It keeps track of the country's transactions with other countries.
- If the value of goods and services imported exceeds the value of those exported, the country runs a deficit.
- When an **economy runs a current account deficit, it consumes more than it produces (consumption = domestic consumption + investment + government spending)**.
- This can only happen if other economies lend their savings to it (via debt or direct/portfolio investment in the economy) or if the economy is depleting its foreign assets, such as its official foreign currency reserve.
- A **rising CAD indicates that a country has become uncompetitive**, and investors may be unwilling to invest there.
- **Current Account =** Trade gap + Net current transfers + Net income abroad (Trade gap = Exports – Imports)

Components of CAD

- **Trade Deficit:** It is a situation in which a nation's imports of goods and services exceed its exports, indicating an imbalance in trade. This results in the country spending more on foreign goods and services than it earns from selling its own, leading to an outflow of domestic currency to foreign markets.
- **Net Income:** It is derived from the income earned by multinational corporations (MNCs) from their investments within India. When the income from foreign investments exceeds the savings of a country's residents, a net income deficit occurs. This measure includes payments to foreign entities in the form of dividends from domestic stocks, interest payments on bonds, and wages disbursed to foreign individuals employed within the country.
- **Net Transfers:** It involves financial flows between countries, including money sent by foreign residents to their home nations (remittances), government grants to foreigners, and various cross-border financial inflows like gifts and donations.

Impact of Rising Oil Prices on India's Current Account Deficit (CAD)

- **Increased Import Costs:** India is a major importer of oil and petroleum products. Rising global oil prices increase India's import costs for oil, worsening the trade deficit and contributing to a larger current account deficit (CAD).
- **Inflationary Pressure:** Rising oil prices can trigger inflation by increasing transportation costs, leading to higher prices for goods and services, affecting India's purchasing power and potentially impacting the trade balance and current account deficit (CAD).
- **Exchange Rate Effects:** Rising oil prices can strain the Indian rupee's exchange rate. Increased oil import costs force India to sell more rupees for foreign currency, leading to rupee depreciation, pricier imports, and trade balance effects. A weaker rupee can attract foreign investment, impacting the current account deficit, positively or negatively depending on the circumstances.

Measures to moderate Current Account Deficit

- **Encourage Exports:** The government should focus on promoting and supporting export-oriented industries. This can be done by providing financial incentives, simplifying export procedures and regulations, and negotiating favorable trade agreements with other countries.
- **Promote Import Substitution:** Encouraging domestic production of goods that are currently being imported can help reduce the trade deficit. The government can provide incentives to domestic manufacturers, implement policies that support domestic production, and impose tariffs or import duties on certain goods to make them less attractive compared to domestically produced alternatives.
- **Improve Productivity and Competitiveness:** Enhancing the productivity and competitiveness of the domestic economy is crucial for increasing exports and reducing the trade deficit. Investments in infrastructure, technology, and education can help upgrade industries and improve overall productivity.
- **Attract Foreign Direct Investment (FDI):** Attracting FDI can help bridge the current account deficit by bringing in capital and technology. The government should create a conducive environment for foreign investors by simplifying regulations, improving infrastructure, ensuring policy stability, and offering incentives for priority sectors.

Question: Consider, the following statements:
(UPSC 2023)

Statement-I: India accounts for 3.2% of global export of goods.

Statement-II: Many local companies and some foreign companies operating in India have taken advantage of India's 'Production-linked Incentive' scheme.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect
- (d) Statement-I is incorrect but Statement-II is correct

Answer: (d)

Question: A "closed economy" is an economy in which (**UPSC 2011**)

- (a) the money supply is fully controlled
- (b) deficit financing takes place
- (c) only exports take place
- (d) neither export nor imports take place

Answer: (d)

Centre Hikes Windfall Tax On Domestic Crude, Cuts Levy On Export Of Diesel, ATF
#Different_Types_of_Taxes

Priority: Medium



Primary Source: The Hindu

Relevance: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, Government policies and interventions for development in various sectors and issues arising out of their design and implementation

Prepp Prelims Booster: Windfall tax

Prepp Mains Booster: Issues Related To Windfall Tax

Context

- Recently, the Union **government raised the Special Additional Excise Duty (SAED) on crude petroleum to ₹12,100 per tonne** with effect from September 30.



Windfall tax hike

- Crude petroleum:** The windfall tax on domestically produced crude was raised from ₹10,000 to ₹12,100/tonne by the Government of India.
- Diesel:** The duty on the export of diesel was reduced from ₹5.50 per liter to ₹5 per liter.
- ATF:** The duty on jet fuel or Aviation Turbine Fuel (ATF) has been lowered from ₹3.5 per liter to ₹2.5 per liter.
- Petroleum:** The Special Additional Excise Duty (SAED) on petrol has been retained at zero.

What is a windfall tax?

- A windfall tax is one that is **levied by the government on certain industries that are experiencing significantly above-average profits** i.e. windfall gain due to certain economic conditions.
- These windfall gains can be due to irregular rises in demand or interruptions in supply as a result of geopolitical disruptions, natural disasters, or wars.
- They are **usually imposed when there is a sudden increase in profits in a particular sector** or if it is necessary to temporarily boost public spending at the same time.

Windfall tax in India

- India first imposed windfall taxes in July 2022 to tax the windfall gains made by domestic crude producers** selling crude at international benchmarked pricing amid the Russia-Ukraine war.
- At the same time, government spending had increased as a result of the lowered central excise charge and additional expenditures on food and fertilizer.
- Therefore, the government levied a windfall tax of ₹6/liter on petrol and ATF and ₹13/liter on diesel to accommodate the shortfall.
- The tax rates are reviewed every fortnight based on average oil prices in the previous two weeks.

Why is the windfall tax imposed on crude?

Rise in prices

- A windfall tax is levied on domestic crude oil if the rates of the global benchmark rise above \$75 per barrel.
- Export of diesel, ATF, and petrol attract the levy if product cracks rise above \$20 per barrel.
- At present, crude prices are in excess of \$90 per barrel amid supply concerns.
- OPEC+ as well as Saudi Arabia and Russia have announced voluntary cuts.
- The potential increase in demand due to heating requirements in the winter could potentially raise prices.

Availability

- As a result of exports becoming more remunerative, refiners have begun to export more of their stock which could lead to concerns over domestic availability.
- Windfall taxes help control imports and exports and regulate supply chain issues.

What are some benefits associated with windfall tax?

- **Boost government revenue:** The imposition of a windfall tax boosts the government's revenue which can be used to provide public services like infrastructure, healthcare, sanitation, etc.
- **Service debt:** Additional funds raised via a windfall tax can help the country service its debt to global financial institutions and other countries.

What are the challenges associated with a windfall tax?

- **Economic risks:** Windfall taxation is an arbitrary taxation system that could increase the risks of investing.
- As a result, investors may demand a higher return on their investments or reduce their investments.
- The reduction in dividend payout affects pension funds and insurance companies that are the major investors in such companies.
- **Lack of funding:** It eliminates an easy source of funding by reducing the amount of profits left over for corporate reinvestment.
- **Unpredictable and unfair nature:** It makes the tax system unpredictable and might deter businesses from making capital expenditures.
- This could slow economic growth and lead to the out-migration of large MNCs.
- It is considered unfair as businesses are not informed in advance and also affects smaller firms that do not make such a high windfall during supply shortages.

- **Rising energy costs:** It could reduce the funds available for investment in alternate sources of fuel like greener and cleaner fuels.
- As a result, the price of energy could rise significantly.
- **Exports:** If imposed on products exported by India, it could reduce the quantity of exports due to the increase in costs.
- **Inflation:** Imposing a windfall tax can be difficult due to inflationary conditions which could lead to losses in the market.

Conclusion

- Windfall taxes are used by governments to capture excess profits in certain industries during extraordinary circumstances.
- Although they can boost government revenues and support public services, they also pose challenges such as economic costs, and environmental impacts.

RBI Decides To Discontinue I-CRR In A Phased Manner #RBI #MPC

Priority: Medium 

Primary Source: The Hindu

Relevance: Indian Economy and issues relating to planning, mobilization, of resources, Growth and Development;

Prepp Prelims Booster: Incremental Cash Reserve Ratio

Context

- Recently, the **Reserve Bank of India (RBI) has announced the discontinuation of the incremental cash reserve ratio (I-CRR) in a phased manner.**
- While 25% of the I-CRR was released on September 9, another 25% would be released on September 23 and the balance would be released on October 7.

What is I-CRR?

- The **Incremental cash reserve ratio (I-CRR) is an additional cash balance that the RBI can ask banks to maintain over and above the cash reserve ratio (CRR).**
- Banks are required to maintain liquid cash amounting to a certain proportion of their deposits and certain other liabilities with the RBI.
- This is a tool at the disposal of the RBI to control the liquidity in the economy and can also act as a buffer in periods of bank stress.

When was I-CRR introduced?

- **The I-CRR (Incremental Cash Reserve Ratio) was introduced by the Reserve Bank of India (RBI) on August 10.**

- Under this policy, banks were required to maintain a 10% reserve on the increase in their **net demand and time liabilities (NDTL)** between May 19, 2023, and July 28, 2023.
- NDTL is the difference between the sum of demand and time liabilities (deposits) of a bank (with the public or the other bank) and the deposits in the form of assets held by the other banks.
- This policy came into effect from the fortnight starting August 12.
- The central bank had decided to keep the Cash Reserve Ratio (CRR) unchanged at 4.5%.

Why was I-CRR needed?

- The introduction of the I-CRR was a short-term strategy designed to counter the excess liquidity resulting from factors such as the reintroduction of ₹2,000 banknotes into the banking system, the substantial transfer of surplus funds to the government by the RBI, an increase in government expenditure, and a surge in capital inflows.

Earlier introduction of I-CRR

- In November 2016, the Reserve Bank of India (RBI) introduced the Incremental Cash Reserve Ratio (I-CRR) as a measure to absorb excess liquidity in the financial system. This move was in response to the demonetization of Rs 500 and Rs 1,000 banknotes on November 8, 2016.
- Under the I-CRR, banks were required to maintain a 100% reserve on the increase in their Net Demand and Time Liabilities (NDTL) between September 16, 2016, and November 11, 2016.
- However, the I-CRR was a temporary measure and was discontinued from the fortnight beginning December 10, 2016.

What is CRR?

- The **Cash Reserve Ratio (CRR)** is the **minimum amount of the total deposits which banks have to maintain as cash reserves** with the Reserve Bank of India.
- CRR is set according to the guidelines of the central bank of a country.
- It is an essential tool to maintain the health of the banking system. Banks cannot use this amount for lending or for any investment purposes.
- Currently, CRR stands at 4.5%.

What is SLR?

- **Statutory Liquidity Ratio (SLR)** is the **minimum percentage of deposits that a commercial bank must keep in liquid cash, gold, or other securities.**

- It's essentially the reserve requirement that banks must meet before they may extend credit to customers.
- Section 24 (2A) of the Banking Regulation Act of 1949 established the Statutory Liquidity Ratio (SLR).

Question: When the Reserve Bank of India announces an increase of the Cash Reserve Ratio, what does it mean? **(UPSC 2010)**

- (a) The commercial banks will have less money to lend
- (b) The Reserve Bank of India have less money to lend
- (c) The Union Government will have less money to lend
- (d) The commercial banks will have more money to lend

Answer: (a)

Explanation: CRR refers to the percentage of deposits banks have to keep as a reserve (in cash). This reserve sum is not available for banks for lending and thus if the CRR increases, banks will have less money to lend.

Therefore, option (a) is the correct answer.

Gresham's Law: What Happens When Governments Fix Currency Exchange Rates
#Currency_&Exchange_Rates

Priority: Medium

Primary Source: The Hindu

Relevance: Effects of liberalization on the economy, Indian Economy, and issues relating to planning, mobilization, of resources, growth, development, and employment.

Prepp Prelims Booster: Gresham's Law

Prepp Mains Booster: Issues Related To Currency and Exchange Rates

Context

- This article discusses **Gresham's Law, which comes into play when the exchange rate between two currencies is fixed by the government at a certain ratio** which is different from the market exchange rate.
- This was **recently applied in Sri Lanka where the Sri Lankan Central Bank fixed the exchange rate between the Sri Lankan Rupee and the U.S. dollar.**



What is Gresham's Law?

- According to Gresham's Law, **"bad money drives out good money."**
- It becomes relevant when a government sets an exchange rate for its currency that differs from the market exchange rate.
- As a result of this government intervention, a disparity occurs between the official rate and the actual market value.
- The currency that the government undervalues, fixing its price below the market rate, tends to disappear from circulation while the overvalued currency remains in circulation but struggles to find buyers.
- **Conditions for Gresham's Law to be applicable:**
- **Government Intervention:** Gresham's Law is applicable only when governments enforce fixed exchange rates and the law is implemented effectively by authorities.

Market Exchange Rate Dynamics

Equilibrium Price

- The market exchange rate is an equilibrium price at which the currency supply equals demand.
- Currency supply rises with price, and demand falls as price increases.
- This results in the creation of a dynamic balance.

Consequences of Price Fixing

- When the Government imposes a cap on the price of a currency, this equilibrium is disrupted.
- The undervalued currency's demand rises when its price is fixed low, while supply diminishes, leading to a currency shortage.

Origins of the term

- Gresham's Law is named after Thomas Gresham, an English financier who advised the monarchy on financial matters.
- It applies to paper currencies as well as commodity currencies and other goods.
- Whenever a government arbitrarily fixes the price of a commodity, making it undervalued compared to the market rate, the commodity vanishes from the formal market, driving transactions into the black market.

- Sometimes, it can result in the outflow of certain goods through the borders.
- E.g: Gresham's Law comes into play when governments fix the exchange rate of commodity money, like gold and silver coins, below their market value.
- This results in people stopping using these coins at the government-fixed rate.
- Therefore, people opt to melt them and sell the pure metal at a higher market price.

Case Study: Sri Lanka's Currency Crisis

- During the Sri Lankan economic crisis, the Sri Lankan Central Bank fixed the exchange rate between the Sri Lankan rupee and the U.S. dollar.
- It was mandated that the price of the U.S. dollar in terms of the Sri Lankan rupee should not rise beyond 200 rupees per dollar even though rates in the black market suggested it should be much more.
- People were prohibited from paying more resulting in the Sri Lankan rupee becoming overvalued and the U.S. dollar becoming undervalued in comparison to the market exchange rate.
- As the official rate constrained the dollar's price, it gradually disappeared from the formal foreign exchange market forcing people to rely on the black market where it was available at a higher than official rate.

Thiers' Law

- In the absence of government-mandated rates, Thiers' Law, which is a complement to Gresham's Law comes into play.
- It has been named after the French politician Adolphe Thiers.
- According to Thiers' Law, good money drives out bad money in the absence of a government decree fixing the exchange rate between currencies.
- In case the exchange rate between currencies is not fixed and people have the choice to freely choose between currencies, they will gradually stop using currencies that they consider to be of poor quality and adopt currencies that are found to be of better quality.
- The rise of private cryptocurrencies in recent years has been cited by many analysts as an example of good money issued by private money producers driving out bad money issued by governments.

Conclusion

- Gresham's Law highlights the consequences of government interference in exchange rates.

Question: Consider the following statements:
(UPSC CSE 2021)

1. Tight monetary policy of the US Federal Reserve could lead to capital flight.
2. Capital flight may increase the interest cost of firms with existing External Commercial Borrowings (ECBs).
3. Devaluation of domestic currency decreases the currency risk associated with ECBS.

Which of the statements given above are correct?

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

Answer: (a)

Explanation:

- Central Banks enact monetary policy to keep inflation, unemployment, and economic growth stable and positive.
- The tight monetary policy of the US Federal Reserve could lead to capital flight by the investors. **Hence, statement 1 is correct.**
- Capital flight can increase the interest costs as there is a reduced money supply in the system.
- This leads to an increase in the interest cost of firms that have external commercial borrowings. **Hence, statement 2 is correct.**
- The devaluation of domestic currency does not affect External Commercial Borrowings as it is denominated in the foreign currency and not in the domestic currency. **Hence, statement 3 is incorrect.**

Therefore, option (a) is the correct answer.

Question: With reference to Central Bank digital currencies, consider the following statements:
(UPSC 2023)

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

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (c)

Explanation:

- It is possible to make payments in digital currencies without using US dollar or SWIFT system, because CBDCs are digital currencies that are issued and regulated by central banks. This means that they are not subject to the same restrictions as traditional currencies, such as the US dollar. CBDCs can be used to make payments directly between two parties, without the need for a third party, such as a bank or a payment processor. This makes it possible to make international payments without the need for the US dollar or SWIFT system. **Hence, statement 1 is correct.**
- A digital currency can be distributed with a condition programmed into it such as a time-frame for spending it, because CBDCs can be programmed with conditions. This could be used to encourage people to spend their money within a certain period of time, or to prevent people from spending money on certain items. **For example,** a government could issue a CBDC that can only be used to purchase goods and services from domestic businesses. This would help to support the local economy and reduce the amount of money that is spent on imports. **Hence, statement 2 is correct.**

Therefore, option (c) is the correct answer.

Centre Softens Angel Tax Rules #Different_Types_of_Taxes

Priority: Medium



Primary Source: The Hindu

Relevance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation; Indian Economy, Effects of liberalization on the economy

Prepp Prelims Booster: Angel tax, Finance Act 2023

Prepp Mains Booster: Issues Related To Angel Tax and Investment

Context

- Recently, the **Income Tax Department has notified new angel tax rules that comprise a mechanism to evaluate the shares issued by unlisted startups to investors**

Background

- The **Finance Act, 2023 made amendment to bring the consideration received from non-residents for issue of shares by an unlisted company** within the ambit of section 56(2)(viib) of the Income-tax Act, 1961.

- If this consideration exceeds the **Fair Market Value (FMV)** of the shares, it is taxable under "Income from other sources." Rule 11UA outlines how to compute the FMV of such shares.
- Following this amendment, the **Central Board of Direct Taxes (CBDT)** released a draft notification, inviting suggestions/comments on the proposed changes to Rule 11UA.
- Now, the CBDT has issued the Income-tax (Twenty-First Amendment) Rules, 2023, amending Rule 11UA.

Understanding section 56(2)(viib) of the Income Tax Act

- **Section 56(2)(viib) of the Income Tax Act** provides that where a closely-held company issues shares to a resident investor at a value higher than the "fair market value" of such shares, then the excess of the issue price over the fair value will be taxed as the income of the issuer company.
- **Rule 11UA or of the Income-tax Rules** provides the formula for the computation of the fair market value of unquoted equity shares for the purpose of section 56(2) (viib) of the Act.



Key Changes in Rule 11 UA

- The Central Board of Direct Taxes issued a notification, amending Rule 11UA under the Income Tax Act, incorporating changes to the draft norms released earlier.
- In addition to the two methods for valuation of shares, namely, **Discounted Cash Flow (DCF) and Net Asset Value (NAV) method**, available to residents under Rule 11UA, five more valuation methods have been made available for non-resident investors, namely,
 - Comparable Company Multiple Method, Probability Weighted Expected Return Method, Option Pricing Method, Milestone Analysis Method, Replacement Cost Method.
- It offers a 10% tolerance for deviations from the accepted share valuations.
- When shares are issued to non-resident entities notified by the Central Government, the Fair

Market Value (FMV) of the equity shares corresponding to the consideration received can be used as the valuation basis for both resident and non-resident investors.

What is Angel Tax?

- The **angel tax is a 30% tax on any excess funds raised by an unlisted firm through the issuance of shares over and above the shares' fair market value.**
- It typically impacts start-ups and their 'angel' investors and is taxed because it is viewed as corporate income.
- The **angel tax was implemented in 2012 under section 56(2)VII B of the Income Tax Act, 1961.**
- Earlier, it was imposed only on investments made by a resident investor, but Budget 2023-24 proposed to extend angel tax even to non-resident investors from April 1, 2024.

Why was Angel Tax introduced?

- The government introduced the Angel Tax to curb money laundering and make it easier for businesses to comply with the tax norms.
- The angel tax is levied on unlisted businesses or startups on the funding they get from the angel investors.
 - An angel investor is an individual with a high net worth willing to provide financial backing for small startups and entrepreneurs.
 - Angel investors give financial assistance in exchange for ownership equity in the company.

Question: Which of the following is issued by registered foreign portfolio investors to overseas investors who want to be part of the Indian stock market without registering themselves directly? **(UPSC 2019)**

- (a) Certificate of Deposit
- (b) Commercial Paper
- (c) Promissory Note
- (d) Participatory Note

Answer: (d)

Explanation: Participatory notes (PNs) are instruments issued by SEBI-registered foreign institutions to entities that want to invest in Indian markets but do not want to directly register with the market, resulting in the concealment of the investor's identity.

Therefore, option (d) is the correct answer.

Question: In the context of finance, the term 'beta' refers to: **(UPSC 2023)**

- (a) the process of simultaneous buying and selling of an asset from different platforms

- (b) an investment strategy of a portfolio manager to balance risk versus reward
- (c) a type of systemic risk that arises where perfect hedging is not possible
- (d) a numeric value that measures the fluctuations of a stock to changes in the overall stock market

Answer: (d)

Explanation: Beta is a numeric value that measures the fluctuations of a stock to changes in the overall stock market. It is calculated by comparing the returns of a stock to the returns of a benchmark index, such as the S&P 500.

Therefore, option (d) is the correct answer.

Bridging The Malnutrition Gap, The Bemetara Way #Food_Security

Priority: Medium



Primary Source: The Hindu

Relevance: Issues relating to poverty and hunger, Issues relating to development and management of Social Sector/Services relating to Health Government policies and interventions for development in various sectors and issues arising out of their design and implementation

Prepp Prelims Booster: Malnutrition

Prepp Mains Booster: Issues Related to Poverty and Malnutrition

Context

- This article discusses the **Potth Laika Abhiyaan, which is being implemented in Bemetara, Chhattisgarh which has a high number of Severe Acute Malnourished children** despite being agriculturally rich and unaffected by Naxal activities.
- The major problem faced in addressing malnutrition is the lack of knowledge about feeding practices such as when and what to eat.
- Child malnutrition in India contributes to around 68.2%** of under-five child mortality and also affects their health, learning capacity, school performance, and potential earnings, and increases the risk of contracting chronic diseases such as diabetes, hypertension, and obesity.

Government Efforts to combat malnutrition

- Over the years, the Indian government has attempted to implement multiple schemes to ensure the food security of the population.
- This includes initiatives such as the provision of mid-day meals in schools, the Public Distribution System, and the [Prime Minister's Overarching Scheme for Holistic Nourishment \(POSHAN\)](#)

[Abhiyaan](#) which provides ready-to-eat packets and hot meals to mothers and children at Anganwadi Centres (AWCs).

- Various state-specific schemes such as the Mukhyamantri Suposhan Yojaana (Chhattisgarh) have been implemented to distribute nutritional add-ons such as egg, banana, protein powders, peanut chikki, and jaggery.
- Although these initiatives ensure access to food, India still faces persistent challenges related to the lack of information about nutrition.
- There is an inadequate amount of knowledge about proper eating and feeding practices, food-related myths, and insufficient highly processed foods.

Role of Social and Behavior Change Communication (SBCC)

- "Jan Andolan" or Social and Behavior Change Communication is a critical component of the POSHAN Abhiyaan.
- Various awareness programs have been initiated under the POSHAN Abhiyaan such as bicycle rallies, planting Poshan Vatikas, celebrating Poshan Maah, Poshan Pakhwaras, and Godh Bhaaraais.
- However, the concept of nutrition counseling needs to be institutionalized and uniformly implemented across the country, and field staff must be properly trained in nutritional counseling.
- According to the POSHAN Abhiyaan Progress Report, 2018, it is necessary to implement a focused and coherent SBCC Action Plan.

Case Study: Lessons from Bemetara

- Bemetara is a district in central Chattisgarh that was created in 2012 after the division of Durg district.
- Unique:** Severe Acute Malnourished (SAM) children in the district was as high as 3,299 (in 2022) despite the district being agriculturally rich and located in the fertile plain region and free from Naxal-extremism.
 - The malnutrition figures are similar to those in the tribal-and Naxal-dominated districts of Chattisgarh such as Bastar.
- Major factors for malnutrition:**
 - The problem faced by the district is not because of a lack of access to nutritious food.
 - Rather, it is mainly due to a lack of information about what to eat and when to eat.
- Therefore, a programme of nutritional counseling and robust monitoring was chosen as the strategy to counter malnutrition in the region.

Potth Laika Abhiyaan

- The Potth Laika Abhiyaan, which translates to “Healthy Child Mission” in Chattisgarhi, is a nutrition counseling programme that is implemented in 72 of the most affected AWCs in the Bemetara sub-division of Bemetara district.
- The initiative is being provided technical support by UNICEF.
- Under the scheme, ground-level staff from the Health and Women and Child Development departments have been provided training on ways to provide nutrition counseling in the region.
- Parents of Severe Acute Malnourished (SAM) and Medium Acute Malnourished (MAM) children are summoned and counseled.
- Local community leaders such as sarpanches, panchayat sachivs, and religious heads also participate in the counseling sessions
- Staff explain the importance of proper nutrition and maintaining a healthy lifestyle in simple Chattisgarhi.
- They dispel misinformation and myths about food and the necessary constituents of “Tiranga Bhojan” or a balanced diet and the the need for regular handwashing and hygiene.
- The progress of the targeted children is regularly monitored including through door-door visits to the houses of targeted children.

- **SAM:** The World Health Organisation (WHO) defines ‘severe acute malnutrition’ (SAM) as very low weight-for-height or a mid-upper arm circumference of less than 115 mm, or the presence of nutritional edema.
- Children suffering from SAM are nine times more likely to die as a result of their weakened immune system.
- They have a much higher risk of contracting secondary infection.
- **MAM:** Medium Acute Malnutrition (MAM), or wasting, is defined by a weight-for-height indicator between -3 and -2 z-scores (standard deviations) of the international standard or by a mid-upper arm circumference (MUAC) between 11 cm and 12.5 cm.
- Such children are at risk of malnourishment but not of death.

Has the Abhiyaan been effective?

Encouraging Results

- The Potth Laika Abhiyaan has successfully improved the nutritional status of targeted

children through nutrition counseling and monitoring.

- Within nine months, 53.77% of children were rescued from malnutrition.
- 61.5% of MAM children and 14.67% of SAM children have been lifted out of malnutrition.
- In comparison, only 30.6% of children were lifted out of malnutrition in a random control group of 20 AWCs where the Abhiyaan was not implemented.
- This amounted to 33.8% MAM children and zero SAM children who were taken out of malnutrition, indicating a total increase of 23% over and above the control group.

Cost-Effectiveness

- Unlike meal provision programs which require elaborate budgets and face the risk of fund leakages, the Potth Laika Abhiyaan operates at zero cost.
- This makes the Abhiyaan a cost-effective solution for the eradication of malnutrition.
- This is significant as the **State of Food Security and Nutrition in the World’ (SOFI) 2023** had the cost of a healthy diet in India, which is still the lowest among [BRICS](#) nations, increased by 65%(Mumbai) in five years.

Scaling the Model Nationwide

- The success of the Potth Laika Abhiyaan has provided evidence for the Mission to be replicated on a national scale in all districts and states.

Other Initiatives for Nutrition

- **POSHAN Abhiyaan:** The National Nutrition Mission (NNM) of the government of India has been renamed the POSHAN Abhiyaan.
- It was launched with the aim of ensuring a “Malnutrition Free India” by 2022.
- **Mid-day Meal (MDM) scheme:** It is a scheme to improve the nutritional levels of school children which in turn can directly and positively affect other metrics such as enrolment, retention, and attendance in schools.
- **The National Food Security Act (NFSA), 2013:** It is a scheme to ensure food and nutrition security for the most vulnerable in the country and make access to food a legal right.
- **Integrated Child Development Services (ICDS) Scheme:** It was launched in 1975 to provide food, preschool education, primary

healthcare, immunization, health check-up, and referral services to children under the age of 6 and their mothers.

- **Anemia Mukht Bharat Abhiyan:** It was launched in 2018 to ensure that the annual rate of decline of anemia in the country accelerates
- from one to three percentage points.

Conclusion

- The combination of providing food and nutrition counseling with appropriate monitoring will help significantly in eradicating malnutrition in India and achieving "Kuposhan Mukht Bharat".

Question: Which of the following is/are the indicators/ indicators used by IFPRI to compute the Global Hunger Index Report? **(UPSC 2016)**

1. Undernourishment
2. Child stunting
3. Child mortality

Select the correct answer using the code given below:

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

Answer: (c)

Explanation:

- The Global Hunger Index (GHI) is designed to comprehensively measure and track hunger globally and by country and region.
- To reflect the multidimensional nature of hunger, the GHI combines the following four component indicators into one index:

Undernourishment, Child wasting, Child stunting and Child mortality.

Therefore, option (c) is the correct answer.

UPSC Previous Year Mains Question:

1. How far do you agree with the view that the focus on lack of availability of food as the main cause of hunger takes the attention away from ineffective human development policies in India? **(UPSC 2018)**

China's Economic Slowdown, Its Ripple Effect
#Liberalization #Globalization

Priority: Low



Primary Source: The Hindu

Relevance: Indian Economy and issues relating to planning, mobilization, of resources, growth, Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth, Effect of

policies and politics of developed and developing countries on India's interests,

Prepp Prelims Booster: Unbalanced Growth, Deficit Financing etc

Prepp Mains Booster: Issues related to Impact of Chinese Slowdown on Indian Economy

Context

- Recently, a report by the Wall Street Journal revealed that **the Chinese economy, the world's second-largest, is in deep distress** and that its growth model is now broken.
- This has raised concerns about **deflation which is concerning for China and the rest of the world.**

Unbalanced growth and short-term solutions

- In 2007, Chinese Prime Minister Wen Jiabao warned about China's unstable, unbalanced, uncoordinated, and unsustainable economic growth.
- Although he recommended the imposition of corrective measures, the 2008 global financial crisis prompted China to implement short-term solutions such as investments in infrastructure, railways, highways, and energy.
- The core concerns such as a lack of consumption, regional inequality, and lack of social security were ignored in favor of sustaining a double-digit growth rate.
- This was done to ensure the domestic legitimacy of China's leadership in China which depended on the creation and spreading of prosperity among the citizens.
- However, Chinese financial markets suffered from a lack of regulatory oversight as loans to businesses were based on "Guanxi", which is a Chinese term that refers to the nodal networks based on factions, friendships, and relationships.

In a 'new normal', the ground realities

- China is the world's second-largest economy and the world's largest developing economy.

Changing Priorities in 2017

- In 2017, President Xi Jinping announced a shift in China's focus towards improving the quality of life of its citizens.
- China transitioned from an era of exports, infrastructure expenditure, and large-scale investments to a "new normal" which is characterized by slower growth rates.
- This would mean a change from the more than 10% growth enjoyed by China in the previous decades which also meant more jobs and disposable income.

- As a consequence of the lower growth, there was a shortage of new jobs despite a continuous increase in China's working-age population.
- As a result, unemployment has risen leading to the Chinese government advising students to defer their graduation.

Labor Costs and Overproduction

- In Xi's first term (2012-17), export growth rates slowed meaning that labor costs were rising.
- Increased investments in social security have led to wage hikes.
- The overproduction problem in sectors like housing, energy, and construction emerged as a result of excessive credit availability. Despite early supply-side reforms, these sectors faced inventory surpluses.

Political Choice as a Solution

- One of the demands of China's unique political economy is that overcoming economic challenges is viewed as a political choice.
- In 2020, President Xi referred to the "Disorderly expansion of capital" in the context of the withdrawal of the Ant Group's IPO.
- This highlighted the government's role in controlling capitalist activities with experts casting doubts on the Chinese economy's ability to innovate.

Rollback of Promises

- There has been a significant rollback of China's promise in 2013 of allowing markets to play a greater role in resource allocation.
- This has been attributed to the persistence of political interventions in loans and investments.
- This has further resulted in the tightening of the convertibility of the RMB.

Challenge of Saving Habits

- Historically, Chinese citizens have saved more than 50% of their income and have resisted measures to discourage this saving habit.
- Although the government has implemented some social security measures to counteract excessive saving, progress has been slow.
- These include initiatives like "Common Prosperity" and "Dual Circulation" which are aimed at improving wealth distribution and boosting domestic consumption which have not yielded the expected results.

Slowing Growth Since 2015

- China's economic slowdown is considered to have begun in 2015 but was temporarily mitigated by government spending on urbanization projects.

- The US-China trade war and policies such as de-risking and "China plus one" have accelerated the economic challenges faced by China.
- These economic crises were worsened by China's zero-COVID policy which might have led to increased cash hoarding by individuals and businesses.

On state enterprises

- The political connections possessed by State-owned enterprises (SOEs) allow them to evade change and continue with outdated practices.
- They are a significant part of the Chinese economy as they provide social security to a significant workforce.
- The Evergrande crisis exposed China's housing bubble, revealing the issues that affect the Chinese economy such as misregulation and path-dependency.
- Other long-term concerns include the middle-income trap and China's ambition to move up the value chain, i.e. designing and making things.

Impact on the Global Economy

- **Global Implication:** Even with an estimated growth rate of 5%, China continues to add substantial value, especially when compared to India's projected 6.1% growth for 2023. This has global implications, affecting markets for commodities like crude oil, cement, and steel.
- Economic instability in China may influence its perception of regional power dynamics and risk appetite, which could impact border disputes and international relations.

Conclusion

China's economic challenges are complex and multifaceted with historical, political, and external influences. China's economic slowdown could have far-reaching consequences making it necessary for observers and policymakers to understand its dynamics.

UPSC Previous Year Mains Questions:

1. 'China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia', In the light of this statement, discuss its impact on India as her neighbor. **(UPSC GS2 2015)**
2. Do you agree that the Indian economy has recently experienced a V-shaped recovery? Give reasons in support of your answer. **(UPS GS3 2021)**
3. "Investment in infrastructure is essential for more rapid and inclusive economic growth." Discuss in the light of India's experience. **(UPSC GS3 2021)**

White-Collar Hiring Falls 6% In August On Cautious Sentiment In It, Auto Sectors: Report #Unemployment

Priority: Low



Primary Source: The Hindu

Relevance: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment. Inclusive growth and issues arising from it. Population and associated issues, poverty and developmental issues

Prepp Prelims Booster: Unemployment, Types of Employements

Prepp Mains Booster: Issues Related to Employment

Context

- Recently, the Naukri JobSpeak index on the state of the Indian job market revealed that **white-collar hiring in India declined by 6% in August 2023 as compared to the previous year.**



What does the Naukri JobSpeak Index say about hiring in India?

White collar hiring

- The drop in white-collar hiring was due to cautious behavior by sectors such as IT, insurance, auto, healthcare, and BPO.
- Decrease in Job Posting:** The number of job postings dropped from 2,828 in August 2022 to 2,666 in August 2023.
- Hiring was optimistic in non-IT sectors such as oil and gas, hospitality, and pharma.

Sector-wise growth

- The IT sector** displayed positive signs and registered sequential hiring growth following a decline in the past few months.
- This is an indication of the white-collar job market in India returning to a healthy normal.
- New jobs created in the IT industry were 33% lower compared to the high base value in August 2022.
- The insurance, auto, healthcare, and BPO sectors** also showcased cautious hiring sentiments.

- There was a decline in new job creation by 19%, 14%, 12%, and 10%, respectively as compared to August 2022.
- Hiring in the oil and gas sector increased by 17% compared to August 2022.
- There was a 14% increase in new jobs in the hospitality sector.
- New jobs increased by 12% in the pharmaceutical sector
- There was an 8% increase in the number of jobs related to AI functions.
- The steepest increase was seen in roles such as ML Engineers and full-stack AI scientists.
- The most sought-after candidates were those with more than 16 years of experience.

Vulnerability of White-Collar Jobs

- Since October 2022, more than 500,000 job cuts have been announced in white-collar firms across the world.
- Such firms are downsizing and firing middle management and bureaucracy.
- These companies are attempting to restructure their operations in order to adapt to the changing economic conditions.
- The trend of white-collar job losses is surprising as it was predicted that the digital age would lead to an increase in demand for digital skills which would create new white-collar jobs.
- Increasing automation of cognitive tasks through the adoption of AI technology could cause more disruption and unemployment in the white-collar sector.

What are the different categories of employment in India?

Employment Category	Description
Blue-collar	<ul style="list-style-type: none"> It refers to jobs that involve manual labor. It is usually connected to industries that physically build and maintain a product or equipment and are regulated by a labor union. E.g.: Construction, manufacturing, plumbing, shipping, trucking

White-collar:	<ul style="list-style-type: none"> It refers to jobs such as managerial, administrative, or clerical duties and little to no manual labor. E.g.: Accounting, administration, banking, insurance, etc.
Green-Collar:	<ul style="list-style-type: none"> It includes employment that relates to the environment or green development. E.g.: Alternative energy, conservation, eco-technology, organic farming, etc.
New-Collar:	<ul style="list-style-type: none"> These jobs focus on skills and abilities rather than formal education. E.g.: Manufacturing, field engineering, web development, etc.
Gold-Collar:	<ul style="list-style-type: none"> It refers to highly skilled or knowledge-based employment that is extremely valuable to the organization for which they work. E.g.: Lawyers, doctors, researchers, scientists, etc
Gray-Collar:	<ul style="list-style-type: none"> Employees who are not classified as either white or blue-collar employees. E.g.: Firefighters, police officers, health care professionals, security Guards, etc.
Pink-Collar:	<ul style="list-style-type: none"> These jobs are those that are traditionally considered to be work done by women.

	<ul style="list-style-type: none"> Such jobs are often low-paid. E.g.: Nursing, secretarial jobs, and elementary school teachers.
Yellow-Collar:	<ul style="list-style-type: none"> These are creative jobs such as photography, filmmaking, direction, editing, etc.
Red-Collar:	<ul style="list-style-type: none"> This category consists of all types of government workers and farmers.
Open-Collar:	<ul style="list-style-type: none"> This category consists of workers who work from home, usually via the Internet.
Black-Collar:	<ul style="list-style-type: none"> Jobs in the mining and oil industries are collectively referred to as black-collar jobs
Popped-Collar:	<ul style="list-style-type: none"> This category of workers refers to people who come from rich backgrounds but accept 9-5 jobs for character development and youth who are employed in clubs, stocks, and other fancy employment.
Brown-Collar:	<ul style="list-style-type: none"> This category refers to people working in the military and other forces. E.g.: Soldiers in the army, navy, marines, air force, space force, coast guard, etc.

No-Collar:	<ul style="list-style-type: none"> This category of jobs includes over-qualified and unemployed people. It also includes employees from the tech industry who reject the collar classification and artists and other professions who prioritize passion and personal growth over financial profit
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UPSC Previous Year Mains Questions:

1. While we found India's demographic dividend, we ignore the dropping rates of employability. What are we missing while doing so? Where will the jobs that India desperately needs come from? Explain. **(UPSC GS3 2014)**
2. How globalization has led to the reduction of employment in the formal sector of the Indian economy? Is increased informalization detrimental to the development of the country? **(UPSC GS3 2016)**
3. Most of the unemployment in India is structural in nature. Examine the country and suggest methodology adopted to compute unemployment in the improvements. **(UPSC GS3 2023)**

Geography(GS Paper Prelims) & GS Paper I & III (Main)

India Will Be Losing Groundwater Three Times Faster In 2041-2080, Finds Study #Fresh_Water_Resources #Ground_Water_Depletion

Priority: Medium



Primary Source: Down To Earth

Relevance: Distribution of key natural resources across the world

Prepp Prelims Booster: Groundwater Availability Status & Depletion

Prepp Mains Booster: Issues Related To Groundwater Depletion & Mitigation

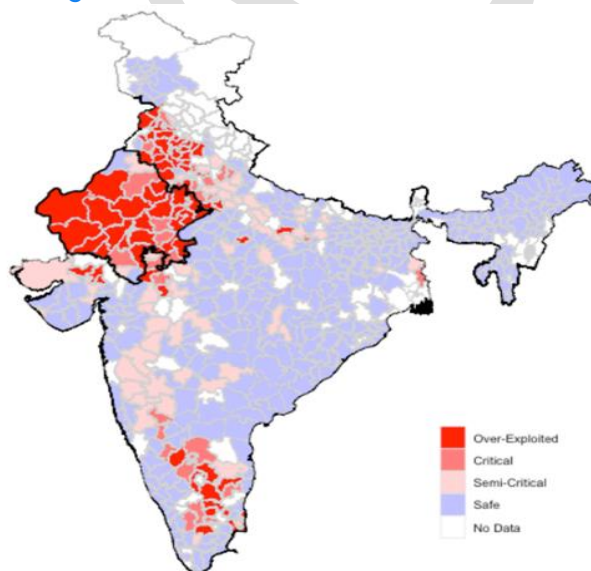
Context

- A report published in the Science Advances journal forewarns that India's **groundwater depletion rate between 2041 and 2080** will be **three times higher than the current rate**.
- The extent of **groundwater level (GWL) decline** in this period is projected to be **3.26 times the**

present depletion rate, contingent on climate models and **Representative Concentration Pathway (RCP)** scenarios.

Report Details

- The rate of groundwater depletion in the country would rise by three times due to global warming leading to increased use of groundwater.
- The depletion would take place despite the projected increases in precipitation and expected decrease in irrigation use due to the fall in groundwater table levels.
- More than 60% of India's irrigated agriculture depends on groundwater and several parts of India are already facing severe groundwater depletion.

Findings

- Increased Groundwater Usage:** Rising temperatures have prompted Indian farmers to intensify their groundwater usage, primarily to meet the escalating water demands of crops.
 - This practice leads to a notable surge in groundwater depletion, posing immediate **threats to sustainable agriculture**.
- Intensified Irrigation:** The surging reliance on groundwater for irrigation attempts to mitigate crop water **stress caused by rising temperatures**.
 - While this adaptation provides temporary relief, it jeopardizes India's long-term food and water security.
- Historical Policies and Groundwater Depletion:** Historical policies have inadvertently fueled excessive groundwater exploitation.
 - Measures such as **providing subsidized or free electricity** for groundwater pumping have

perpetuated these practices even as water tables continue to decline.

- **Projected Expansion of Overexploitation:** By 2050, the problem of groundwater overexploitation is expected to extend beyond its current strongholds in northwest and south India.
- The report predicts that warming-induced groundwater pumping will extend to additional regions, **encompassing southwest and central India**, as well as the southern peninsula.
- **Aquifer Variability:** The impact of warming-induced groundwater depletion varies across India due to variations in aquifer conditions.
- **Alluvial aquifers** in the northwest exhibit **better storage capacity and recharge capabilities** compared to the less favorable hard rock aquifers in south and central India.

Other Causes of Groundwater Depletion in India:

- **Climate Change:** Events linked to climate change, such as **flash floods, droughts, and erratic monsoon rainfall**, have severely impacted India's groundwater reserves.
- **Inefficient Management:** Inefficient water storage strategies, **subpar infrastructure like taps and pipelines**, and mismanagement of equipment have exacerbated groundwater resource depletion.
- **Deforestation:** Increased deforestation rates **hinder the natural recharge of groundwater reserves**, leading to soil erosion and a reduction in aquifer water retention.

Recommendations

- **Electricity Rationing:** Governments should implement policies to regulate power supply and electricity consumption to control groundwater extraction.
- **Regional-Level Water Management:** Encourage responsible groundwater usage by developing and allocating water resources regionally.
- **Incentivization:** The government should incentivize farmers to invest in groundwater recharge initiatives and adopt sustainable practices.
- **Technological Advancements:** Popularize the use of efficient irrigation technologies, such as drip or sprinkler systems, to reduce water consumption.
- **Crop Diversification:** Raise awareness about water-intensive crops and promote their cultivation to alleviate pressure on groundwater systems.
- **Additional Irrigation:** Introduce and popularize supplemental irrigation methods, such as **canal-**

based irrigation, to reduce reliance on groundwater.

Government Initiatives Related to Groundwater:

- **Pradhan Mantri Krishi Sinchayee Yojana:** A scheme to improve water system inclusion and effectively use water resources in agriculture.
- **Jal Shakti Abhiyan:** A mission to promote water conservation through grassroots-level participation.
- **Atal Bhujal Yojana:** A Central Sector scheme to address water resource depletion, improve groundwater management, and encourage water conservation.
- **Aquifer Mapping and Management Programme:** A scheme to map aquifers and develop Aquifer Management Plans for sustainable groundwater resource management.
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):** Focused on developing urban infrastructure, including water supply and drainage, to promote sustainable and efficient water management.

Conclusion

- Without targeted water-saving measures, groundwater depletion rates will continue to escalate due to climate change.
- Currently, water-saving policies and interventions primarily focus on northwest India, but expanding these efforts to south and central India is crucial.
- These initiatives will aid farmers in maintaining irrigation and adapting to warming conditions before severe groundwater depletion becomes irreversible.

To know more about groundwater depletion in the country click the [link](#).

UPSC Previous Year Practice Question

Q. How and to what extent would micro-irrigation help in solving India's water crisis? **(UPSC CSE 2021)**

Q. Suggest measures to improve water storage and irrigation system to make its judicious use under depleting scenario. **(UPSC CSE 2020)**

Q. Elaborate on the impact of the National Watershed Project in increasing agricultural production from water-stressed areas. **(UPSC CSE 2019)**

MCQs

Q. Consider the following statements: **(UPSC CSE 2023)**

Statement-I:

According to the United Nations' World Water Development Report, 2022, India extracts more than a quarter of the world's groundwater withdrawal each year.

Statement-II:

India needs to extract more than a quarter of the world's groundwater each year to satisfy the drinking water and sanitation needs of almost 18% of the world's population living in its territory.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect
- (d) Statement-I is incorrect but Statement-II is correct

Answer: (c)

Q. With reference to the water on the planet Earth, consider the following statements: (UPSC CSE 2021)

1. The amount of water in the rivers and lakes is more than the amount of groundwater.
2. The amount of water in polar ice caps and glaciers is more than the amount of groundwater.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (b)

Q. Which of the following is/are the possible consequence/s of heavy sand mining in riverbeds? (UPSC CSE 2018)

1. Decreased salinity in the river
2. Pollution of groundwater
3. Lowering of the water-table

Select the correct answer using the code given below:

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

Answer: (b)

Q. On the planet earth, most of the freshwater exists as ice caps and glaciers. Out of the remaining freshwater, the largest proportion: (UPSC CSE 2013)

- (a) Is found in atmosphere as moisture and clouds
- (b) Is found in freshwater lakes and rivers
- (c) Exists as groundwater
- (d) Exists as soil moisture

Answer: (c)

Powerful Quake In Morocco Kills More Than 2,000 People And Damages Historic Buildings In Marrakech
#Earthquake #Disaster_Management

Priority: Medium



Primary Source: The Hindu

Relevance: Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc.,

Prepp Prelims Booster: Basic Concepts related to Earthquake & Location of Morocco

Prepp Mains Booster: Basic Concepts related to Earthquake & Location of Morocco

Context

- A powerful earthquake, **measuring 6.8 on the Richter scale**, struck northern Morocco on **September 8th, 2023**, resulting in a tragic loss of approximately 3,000 lives.
- This seismic event was the most significant to affect the **North African nation in over a century.**

Impact of the earthquake

- The earthquake's **epicenter was located near the town of Ighil in the Al Haouz Province**, situated within the **Atlas Mountains.**
- Its tremors were felt across a broad geographical expanse, reaching **Ouarzazate, Marrakesh, Azilal, Chichaoua, Taroudant, and coastal cities such as Rabat, Casablanca, Agadir, and Essaouira.**
- **Even southern Spain, including Huelva and Jaen**, experienced its seismic impact.
- The ancient **12th-century Koutoubia Mosque in Marrakech, a UNESCO World Heritage Site**, sustained damage, including the 69-meter (226-foot) minaret renowned as the **"Roof of Marrakech."**
- **Building vulnerability:** An alarming aspect of this event was the vulnerability of structures in regions where earthquakes are relatively uncommon.

- Many buildings in these areas were not constructed with earthquake-resistant designs, leading to a high casualty count.

What was the cause of the earthquake?

- The earthquake's cause can be attributed to a **reverse fault** that extends approximately 30 kilometers.
- Researchers studying the High Atlas Mountains in Morocco have identified the **tectonic interaction between the Eurasian and African plates as the primary driver**.
- These plates are converging at a rate of **approximately 1 millimeter annually**, compressing the High Atlas Mountains.
 - This compression is evident in the region's high peaks and steep slopes.
- Earthquakes transpire when rocks along a fault line undergo sudden movement, typically due to the release of accumulated energy over time.
 - In this case, the lack of previous major earthquakes in the area indicated that the stress from the ongoing plate convergence had reached a tipping point.
 - The resulting earthquake occurred near Ighil, almost 500 kilometers from the plates' point of convergence.
 - Experts anticipate aftershocks over the coming months or even years, attributed to the additional stress placed on local fault lines.

Reverse Faults:

- A reverse fault materializes **when one block of the Earth's crust is pushed atop another due to the collision of tectonic plates**, leading to the crust's thickening.
- Reverse faults typically **manifest at an angle to the Earth's surface**, and earthquakes arise from the release of accumulated stress along these fault lines.
- These types of faults are frequently encountered in collision zones where tectonic plates give rise to mountain ranges like the Himalayas and the Rocky Mountains.

Other Fault Types:

- **Normal Faults:** These form **when two crustal blocks pull apart**, creating space and stretching the crust into a valley-like shape. Notable examples include the **Basin and Range Province in North America and the East African Rift Zone**.
- **Strike-Slip Faults:** These involve **horizontal sliding of rocks with minimal vertical movement**. They are also known as **transcurrent faults**, with

notable examples including the **San Andreas and Anatolian Faults**.

- **Step Faults:** These occur **when all fault planes within an area have slopes in the same direction**. **The Rhine Valley is situated on a step fault**.

Mitigation Measures:

- Mitigating earthquake impacts requires a multi-faceted approach, from early detection to robust construction practices, to minimize the devastation caused by seismic events.
 - Identifying active fault locations through comprehensive geological, geophysical, and geodetic studies.
 - Estimating the potential strength and frequency of earthquakes on these faults.
 - Studying less-frequent seismic activity for preparedness.
 - Implementing seismic-resistant infrastructure designs and construction.
 - Reinforcing traditional homes and rock structures in the region.
 - Ensuring new constructions adhere to seismic building standards.

Morocco

- It is a hilly country in **northwestern Africa with Rabat as its capital**.
- **Borders:** **Algeria** to the east and southeast, **Western Sahara** to the south, the **Atlantic Ocean** to the west and the **Mediterranean Sea** to the north.
- It is the **only African country** with coastlines on both the Atlantic and Mediterranean seas.
- **Major Mountain Ranges:** **Atlas and Rif ranges**
- Political system: It is a **constitutional monarchy** with two legislative bodies.
- Economy: The Moroccan economy is strongly reliant on raw material exports.



UPSC Previous Year Practice Question

Q. Discuss about the vulnerability of India to earthquake related hazards. Give examples including the salient features of major disasters caused by earthquakes in different parts of India during the last three decades. **(UPSC CSE 2021)**

Q. How important are vulnerability and risk assessment for pre-disaster management. As an administrator, what are key areas that you would focus in a disaster management. **(UPSC CSE 2013)**

MCQs

Q. Which one of the following pairs is correctly matched? **(UPSC CSE 2013)**

Geographical Feature : Region

- (a) Abyssinian Plateau : Arabia
- (b) Atlas Mountains : North-Western Africa
- (c) Guiana Highlands : South-Western Africa
- (d) Okavango Basin : Patagonia

Answer: (b)

Q. Consider the following statements: **(UPSC CSE 2006)**

1. The Richter scale is a logarithmic scale and so an increase of 1 magnitude unit represents a factor of 10 times in amplitude.
 2. Each integer reading of the Richter scale has an energy 100 times that the previous integer reading.
- Which of the statement(s) given above is/are correct?
- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2

Answer: (a)

Rubber Board To Increase Area Under Rubber In Northeast #Important_Plantation_Crops

Priority: Medium



Primary Source: The Hindu

Relevance: Distribution of key natural resources across the world, Major crops-cropping patterns in various parts of the country,

Prepp Prelims Booster: Rubber Crop & Rubber Board of India

Prepp Mains Booster: Issues Related to Rubber Cultivation

Context

- Recently, the Rubber Board, in collaboration with the Central government and the Automotive Tyre Manufacturers' Association, is embarking on a significant venture **to extend rubber cultivation in Northeast India.**

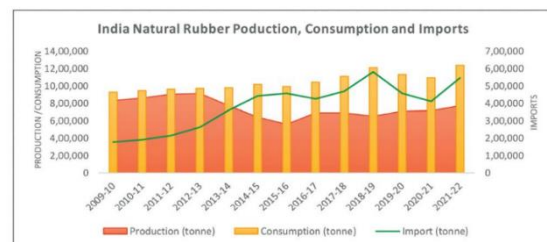
- It encompasses 2 lakh hectares of land in the northeastern states, **with a vision to increase their contribution to India's total rubber production from the existing 18% to a projected 32%** upon the successful implementation of this five-year project.
- The covered regions include **Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and West Bengal.**

Expansion of rubber in the Northeast

- In FY 2022-23, approximately 27,000 hectares have already been brought under rubber cultivation, and an additional 40,000 hectares are expected to be included this year.
- This expansion project has received substantial investments, with tyre manufacturers contributing around ₹1000 crores.

Significance

- **Raw Materials Availability:** Rubber is a vital raw material used in diverse industries, including **medical devices, surgical gloves, aircraft and car tires, pacifiers, clothing, toys,** and more.
 - By expanding domestic rubber production, **India aligns with its goals of self-reliance and Aatmanirbharta.**
- **Quality Improvement:** The project focuses on enhancing the quality of domestically produced rubber and underscores the **need for developing model smokehouses** and upgrading existing facilities.
- **Regional Development:** This initiative encompasses **training and skill development within the region,** accompanied by essential infrastructure development.
 - **Local farmers and tappers will receive specialized training** in best practices and cutting-edge technologies for rubber cultivation.
- **Countering Militancy: Former militants who surrendered were integrated into society** through rubber cultivation programs in Assam and Tripura.



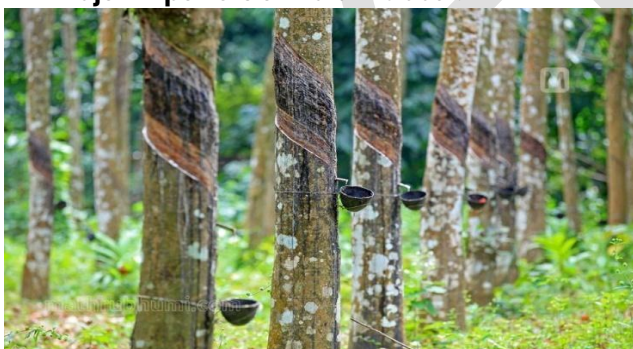
Source: Rubber Board

Introduction of Rubber Cultivation in Northeast India

- The introduction of rubber cultivation in the northeastern region is a relatively recent development.
- While rubber plantations were initially established on Kerala's hillslopes in 1895, large-scale rubber cultivation commenced in 1902.
- In the 1960s, the forest department initiated rubber cultivation in the Northeast with the **aim of providing long-term employment opportunities and land rights for local communities**, addressing the aspirations of landless tribals who were not sufficiently served by shifting cultivation practices.
- The region's agro-climatic conditions make it suitable for rubber cultivation, and the economic viability of rubber was seen as contributing to the overall development of the region.

Rubber Crop

- Rubber is an elastic solid obtained from the latex of tropical trees, **primarily Hevea brasiliensis**.
- This fast-growing, tall tree can reach **heights of 20 to 30 meters** and yields latex approximately 5-7 years after planting.
- **In India, there are 8.5 lakh hectares under rubber cultivation**, with **Kerala and Kanyakumari** contributing nearly 5 lakh hectares, and **Tripura** adding 1 lakh hectares.
- Rubber is used in manufacturing automotive parts, safety gear, gardening appliances, and various industrial products
- It plays a crucial role in the tire industry, with **Germany, Brazil, the U.S.A., and Italy serving as major importers of Indian rubber**.



Conditions for Growth

- Rubber thrives in **hot and humid climates** with temperatures ranging from **20 to 34°C** and humidity levels near 80%.
- These conditions are ideal when complemented by 2000 hours of sunshine and the absence of strong winds
- **Annual rainfall exceeding 200 cm**, well-distributed throughout the year, is also essential,

with daily rainfall followed by strong sunlight being particularly beneficial.

- Rubber grows best in **well-drained and well-weathered soils like lateritic, alluvial, sedimentary, and non-lateritic red soils**, with deep, well-drained loamy soils on hill slopes at **elevations of 300 to 450 meters above sea level**.
- Rubber plantations are generally not established above 700 meters above sea level, as yields tend to decline at higher elevations.

Challenges and Government Initiatives

- Despite the potential benefits of rubber cultivation, the industry faces various challenges, **including falling rubber prices, high labor costs, import competition, a production-consumption gap, and the impact of climate change**.
- The government has implemented initiatives such as the **Rubber Plantation Development Scheme, Rubber Group Planting Scheme, and the National Rubber Policy 2019**.
- **The government has permitted 100% Foreign Direct Investment (FDI) in Rubber Plantations**.

Rubber Board

- **The Rubber Board, a statutory organization** under the **Rubber Act, 1947**, functions under the administrative control of the Union Ministry of Commerce and Industry.
- It plays a pivotal role in developing the rubber industry, maintaining statistical data, promoting rubber marketing, ensuring labor welfare, and issuing licenses (registration) to rubber producers, manufacturers, exporters, and traders, which are mandatory for the manufacturing and export of rubber.
- **Structure: Chairman appointed by the Union Government** and 28 members representing the natural rubber industry.
- It operates through five departments, focusing on General Services, Extension & Advisory Services, Research Services (Rubber Research Institute of India), Training (Rubber Training Institute), and Finance.

UPSC Previous Year Practice Question

Q. Describing the distribution of rubber producing countries, indicate the major environmental issues faced by them. **(UPSC CSE 2022)**

MCQs

Q. Match List-I with List-II and select the correct answer using the code given below the Lists: (UPSC CSE 2008)

List-I (Board) List-II (Headquarters)

- A. Coffee Board 1. Bengaluru
B. Rubber Board 2. Guntur
C. Tea Board 3. Kottayam
D. Tobacco Board 4. Kolkata

Codes:

- (a) A-2; B-4; C-3; D-1
(b) A-1; B-3; C-4; D-2
(c) A-2; B-3; C-4; D-1
(d) A-1; B-4; C-3; D-2

Answer: (b)

Q. Assertion (A): India does not export natural rubber.

Reason (R): About 97% of India's demand for natural rubber is met from domestic production.

(UPSC CSE 2004)

- (a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is NOT a correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

Answer: (b)

Why Is 2023 So Hot? A Rare Pacific Volcano Is Among The Suspects #Geomorphology #Volcanoes

Priority: High



Primary Source: The Indian Express

Relevance: Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc.,

Prepp Prelims Booster: Location of Hunga Tonga-Hunga Ha'apai volcano

Prepp Mains Booster: Issues Related To Volcanic Eruptions and Climate Change

Context

- In 2023, the world experienced an unusually hot year, with **June to August marking the warmest period on record globally.**
- Researchers from Maynooth University, Ireland, have attributed this extreme heat to an unexpected source: **an underwater volcanic eruption that occurred off Tonga in the South Pacific in January 2022.**

Underwater Volcanic Eruption

- In January 2022, the Hunga Tonga-Hunga Ha'apai underwater volcano erupted,** spewing a

massive amount of material into the atmosphere.

- This eruption released an astounding volume of water vapor, **equivalent to 60,000 Olympic swimming pools or approximately 150 million tonnes,** which is nearly 10% of the typical water vapor content in the stratosphere.
- The released water vapor acts as a heat-trapping greenhouse gas, contributing to elevated temperatures.
- This water plume is expected to linger in the atmosphere for approximately eight years, further influencing global temperatures.
- The eruption also **emitted around 500,000 tonnes of sulfur dioxide into the stratosphere.**
- While sulfur dioxide usually has a cooling effect on the planet, the combination of water and sulfur in this eruption complicated the overall climate response.
- This volcanic event had broader effects, altering atmospheric pressure and temporarily clearing fog in Seattle, USA.

Role of Water Vapor and Volcanoes in Global Warming

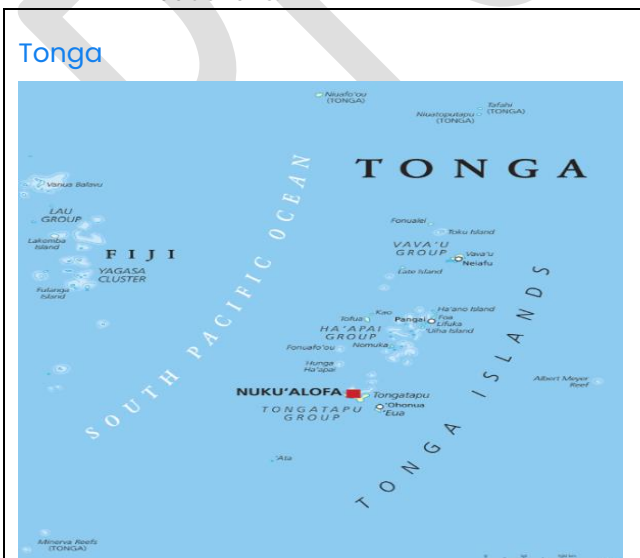
- Water vapor is a natural greenhouse gas, making it the most abundant such gas in the Earth's atmosphere.
 - It acts like a blanket, absorbing and re-emitting longwave radiation, thereby contributing to the greenhouse effect and global warming.
- Traditionally, volcanic eruptions, particularly those on land, have led to a temporary cooling effect due to the dispersion of volcanic ash that blocks sunlight.
 - Notably, **the eruption of Mount Pinatubo in the Philippines in 1991 reduced global temperatures by around 0.5°C** for more than a year.
- However, the Hunga Tonga-Hunga Ha'apai eruption is unique.
 - Unlike most volcanoes, which temporarily cool the surface, this underwater eruption might have a warming effect.
 - This phenomenon is an essential area for further research.
- Despite these volcanic impacts, the primary driver of long-term global warming remains human emissions of greenhouse gases, particularly carbon dioxide, since the Industrial Revolution.

Future Implications

- Climate change is expected to increase the frequency of volcanic eruptions in icy regions. Previously, thick glaciers had kept volcanoes in check.
 - However, with melting glaciers due to climate change, dormant volcanoes might become active, posing additional threats.
- Increased rainfall resulting from climate change can weaken volcano flanks, potentially leading to landslides and eruptions.
 - Notably, heavy rainfall in 2018 weakened the Kilauea volcano's flanks in Hawaii.
- Volcanic eruptions can significantly affect the climate in both hemispheres due to atmospheric circulation patterns, which disperse dust and pollutants.

Climate Change Control and Geoengineering

- Given the unpredictability and irregularity of volcanic activity, it is essential to conduct more research on the potential impacts of volcanic eruptions.
- The challenge lies in preparing for multiple Pinatubo-style eruptions, which could occur alongside ongoing climate change.
- Geoengineering strategies** have been inspired by volcanic eruptions, including the deliberate dimming of sunlight to offset warming.
 - These methods involve **releasing substances like sulfur dioxide into the stratosphere to mimic the cooling effect of volcanic eruptions.**
 - However, geoengineering raises concerns about potential disruptions to weather patterns and the temptation for nations to delay necessary emissions reductions.



- Tonga, a Polynesian nation in the South Pacific**, comprises 171 islands, with 45 inhabited.
- It shares **borders with Fiji, Wallis and Futuna (France), Samoa, New Caledonia (France), Vanuatu, Niue, and the Kermadec (New Zealand).**
- The climate is tropical rainforest.
- Tonga transitioned into a constitutional monarchy in 2010.**
- Captain James Cook's visit in 1773 led to the nickname **"the friendly islands."**
- Diplomatic relations between India and Tonga were established in 1970.

UPSC Previous Year Practice Question

- Q.** Discuss global warming and mention its effects on the global climate. Explain the control measures to bring down the level of greenhouse gases which cause global warming, in the light of the Kyoto Protocol, 1997. **(UPSC CSE 2022)**
- Q.** Mention the global occurrence of volcanic eruptions in 2021 and their impact on regional environment. **(UPSC CSE 2021)**
- Q.** 'Climate Change' is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? **(UPSC CSE 2017)**

MCQs

- Q. "Climate Action Tracker" which monitors the emission reduction pledges of different countries is a: (UPSC CSE 2022)**

- Database created by coalition of research organisations
- Wing of "International Panel of Climate Change"
- Committee under "United Nations Framework Convention on Climate Change"
- Agency promoted and financed by United Nations Environment Programme and World Bank

Answer: (a)

- Q. Consider the following statements:**

- The Barren Island volcano is an active volcano located in the Indian territory.**
- Barren Island lies about 140 km east of Great Nicobar.**

3. The last time the Barren Island volcano erupted was in 1991 and it has remained inactive since then.

Which of the statements given above is/are correct? (UPSC CSE 2021)

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

Answer: (a)

Q. Volcanic eruptions do not occur in: (UPSC CSE 2001)

- (a) Baltic Sea
- (b) Black Sea
- (c) Caribbean Sea
- (d) Caspian Sea

Answer: (a)

Harvest-Plus programme and How India & Africa Can Deal With Food And Nutrition Security Issues Together
#Food_Security #Genetic Engineering

Priority: Medium 

Primary Source: The Indian Express

Relevance: Changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes,

Prepp Prelims Booster: Harvest-Plus programme, Nutrition security

Prepp Mains Booster: Issues Related to Food Security in the Global South

Context

- In recent times, the Global South, including India, has grappled with various food and nutrition security challenges.
- These issues necessitate concerted efforts and strategies to ensure the well-being of populations in these regions.
- The African Union's inclusion in the G-20 during India's G-20 Presidency highlights the country's commitment to fostering South-South cooperation, further emphasizing its dedication to addressing these pressing concerns.

How can the Global South work towards food and nutrition security?

Opening Borders for Agricultural Trade

- A critical step toward achieving food security is **to promote open international borders for agricultural trade.**
- India, over the last three years, exported 85 million tonnes of cereals. However, recent

restrictions on rice and wheat imports may negatively impact African nations that heavily rely on Indian food exports.

- These restrictions were imposed to regulate domestic availability, stabilize prices, and prevent hoarding.

International Collaboration: The Harvest-Plus Program

- International collaboration plays a crucial role in achieving food and nutrition security.
- The **Harvest-Plus program**, a joint effort by the **Consultative Group on International Agricultural Research (CGIAR) and the Indian Council for Agriculture Research (ICAR)**, focuses on developing nutrient-rich varieties of staple crops.
 - Examples include **iron and zinc bio-fortified pearl millet, zinc-bio fortified rice and wheat, and iron bio-fortified beans.**
- India, alongside 36 African nations, actively participates in this program with the goal of making food systems more nutritious, combating malnutrition in Asian and African regions with chronic malnutrition issues, and working towards achieving the SDGs related to hunger and malnutrition elimination by 2030.

Climate Change Financing

- Addressing climate change is an integral component of food security.
- Developed nations must fulfill their commitment to provide \$100 billion to compensate for the losses and damage caused by climate change.
- These funds enable developing nations to implement schemes for poverty eradication, climate change mitigation, adaptation, and food security.
- The G-20 estimates that an additional \$3 trillion annually up to 2030 is required to address these issues.
- Furthermore, private sector funding, mobilized by institutions like the World Bank, can complement resources raised from developed nations.
- Hybrid capital over the next decade could provide more than \$6-7 billion for climate change mitigation in developing countries.

Women Empowerment for Improved Nutrition

- To eliminate malnutrition, improving access to nutritious food is essential but not sufficient on its own.
- The education of women is a crucial factor in enhancing nutritional and healthcare metrics.

- Educated women typically marry later, have fewer children, and give birth to healthier babies.
- Empowering women through higher education can **increase female labor force participation and foster long-term economic growth.**
- State governments can further support this by offering liberal and accessible scholarships for girls, thereby reducing dropout rates in secondary and higher education.

Investments in WASH Initiatives

- Investing in **Water, Sanitation, and Hygiene (WASH) initiatives** can have a significant impact on nutritional outcomes.
- The implementation of the **Swachh Bharat Abhiyan** between 2015-16 and 2019-21 in India increased the number of households with **improved sanitation facilities from 48.5% to 70%.**
- The provision of WASH facilities leads to **increased school enrolment, regular attendance,** and improved learning outcomes.

Climate Change and Food Security

- Climate change poses considerable challenges to food security.
- Rising temperatures have affected crop production, particularly in seasonally arid and tropical regions.
- Altered rainfall patterns have **intensified droughts,** reduced groundwater replenishment, and negatively impacted crop productivity.
- Increased extreme weather events, a consequence of climate change, have **disrupted the crop-growing season,** affecting crop output and the incomes of small and marginal farmers.
- These effects have compromised access to nutritious food and led to reduced nutritional quality, particularly of micronutrients like zinc and iron.

Reshaping the Global Mindset

- Africa's inclusion in the G-20 establishes the "**G-21,**" representing 84% of the world's population, with India and Africa contributing 36%.
- **Notably, in 2020-2022, 69.4% of the world's undernourished population (503 million) resided in India and Africa.**
- Additionally, India and Africa accounted for 67.0% and 75.8% of the world's malnourished children under the age of five.
- This highlights the immense responsibility and potential of these regions in shaping global development and stability.

- Africa's partnership with India is crucial to India's global development strategy.

South-South Collaboration

- South-South cooperation is a collaborative framework encompassing political, economic, social, cultural, environmental, and technical collaboration among countries in the Global South.
- It acknowledges and addresses the specific challenges faced by the least developed nations.
- Founded on key principles of international relations, such as respect for sovereignty, non-interference in internal affairs, and equality, this cooperation aims to empower developing countries to address their unique developmental challenges.
- It emphasizes **capacity building, communication, and increased participation of developing nations** in international development efforts.
- This approach is significant for shared challenges, collective self-reliance, flexibility compared to traditional aid, and knowledge sharing among developing countries to achieve their development goals.

UPSC Previous Year Practice Question

Q. What are the salient features of the National Food Security Act, 2013? How has the Food Security Bill helped in eliminating hunger and malnutrition in India? **(UPSC CSE 2021)**

Q. Explain various types of revolutions, took place in Agriculture after Independence in India. How these revolutions have helped in poverty alleviation and food security in India? **(UPSC CSE 2017)**

Q. Food security bill is expected to eliminate hunger and malnutrition in India. Critically discuss various apprehensions in its effective implementation along with the concerns it has generated in WTO. **(UPSC CSE 2013)**

MCQs

Q. With reference to the provisions made under the National Food Security Act, 2013 consider the following statements: (UPSC CSE 2018)

1. The families coming under the category of 'below poverty line (BPL)' only are eligible to receive subsidised grains.

2. The eldest woman in a household, of age 18 years or above, shall be the head of the household for the purpose of issuance of a ration card
3. Pregnant women and lactating mothers are entitled to a take-home ration' of 1600 calories per day during pregnancy and for six months thereafter.

Which of the statements given above is/are correct?

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

Answer: (b)

Q. Very recently, in which of the following countries have lakhs of people either suffered from severe famine/acute malnutrition or died due to starvation caused by war/ethnic conflicts? (UPSC CSE 2018)

- (a) Angola and Zambia
(b) Morocco and Tunisia
(c) Venezuela and Colombia
(d) Yemen and South Sudan

Answer: (d)

Q. Which of the following are the objectives of 'National Nutrition Mission'? (UPSC CSE 2017)

- To create awareness relating to malnutrition among pregnant women and lactating mothers.
- To reduce the incidence of anemia among young children, adolescent girls and women.
- To promote the consumption of millets, coarse cereals and unpolished rice.
- To promote the consumption of poultry eggs.

Select the correct answer using the code given below:

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

Answer: (a)

Q. In the context of food and nutritional security of India, enhancing the 'Seed Replacement Rates' of various crops helps in achieving the food production targets of the future. But what is/are the constraint/constraints in its wider/greater implementation? (UPSC CSE 2014)

- There is no National Seeds Policy in place.
- There is no participation of private sector seed companies in the supply of quality seeds of

vegetables and planting materials of horticultural crops.

- There is a demand supply gap regarding quality seeds in case of low value and high volume crops.

Select the correct answer using the code given below.

- (a) 1 and 2
(b) 3 only
(c) 2 and 3
(d) None

Answer: (b)

Devastating Libya Floods Were 50 Times More Likely, 50% More Intense Due To Warming Planet #Floods #Climate_Change #Climate_Catastrophy



Priority: Medium

Primary Source: Down To Earth

Relevance: Changes in critical geographical features (including water-bodies and ice-caps) and the effects of such changes.

Prepp Prelims Booster: Location of Lybia, & Global warming

Prepp Mains Booster: Issues Related to Global Warming

Context

- A recent study by the **World Weather Attribution (WWA)** revealed a distressing link between global warming and the devastating floods in Lybia.
- The findings emphasize the role of climate change in making such catastrophic events significantly more likely and intense.



WWA Study on Libyan Floods

- The study conducted by WWA demonstrated that **the Libya floods were exacerbated by anthropogenic global warming**, making them 50 times more likely and 50% more intense.
- The floods were primarily caused by a Mediane, named Daniel**, which also triggered

flooding in Mediterranean countries like Greece, Turkey, and Bulgaria.

Methodology

- To evaluate the influence of climate change, the authors analyzed separate rainfall events and studied their return times, which indicate how often such events occur.
- For Spain and Libya, a 24-hour event was examined.
- Greece, Turkey, and Bulgaria were assessed based on four-day rainfall events.

Key Findings

- The research outcomes shed light on the significant impact of climate change on extreme weather events in various regions:
- **In Spain**, the extreme rainfall event was classified as a **once-in-10 to 40-year event**, leading to severe flooding.
- **Central Greece** experienced floods that were a **once-in-80 to 250-year event**, primarily due to a staggering 760 mm of rainfall in the region during this period.
- A peculiar weather pattern featuring an **omega-blocking event**, characterized by high-pressure zones, connected the two regions. This same event caused heatwaves in France and the UK in September.
- **In Libya**, the impact of the floods was **amplified by the ongoing conflict, the fragile state apparatus, and the lack of effective disaster preparedness**. The conflict hindered the country's ability to address climate threats and maintain essential infrastructure.

Omega-Blocking Events

- Omega blocks are **weather patterns where high-pressure zones disrupt the jet stream's normal flow**, often leading to extreme weather conditions like storms, floods, and heatwaves.
- These events can be challenging to forecast and mitigate.

Libyan Floods and Their Causes

- The Libyan floods resulted from **Mediterranean storm Daniel**, which originated in Greece and caused havoc across several countries, including Libya.
- This storm deposited a massive 440 millimeters (15.7 inches) of rain on eastern Libya, overwhelming the country's infrastructure and causing dam failures.
- **The city of Derna was the worst affected**, with around 10,000 people reported missing and over 30,000 displaced.

Factors Contributing to the Damage

- **Extreme Weather**: Derna received over 150 mm of rainfall between September 10-11, while the average monthly rainfall for September is less than 1.5 mm, causing severe flooding.
- **Vulnerable Geography**: Derna's coastal location and its positioning at the end of a valley bisected by the Wadi Derna, a seasonal river, made it prone to flooding.
 - Although the city is typically safeguarded by dams, the storm's intensity breached these critical structures.
- **Crumbling Infrastructure**: The impact of the civil war in Libya is evident in the inadequate development and maintenance of critical infrastructure, including dams, roads, and electrical grids.

Way Forward

- The disaster in central Greece and Libya highlights the necessity of reevaluating early warning systems.
- Key steps to mitigate such events include **transitioning to impact-based alerts, enhancing Civil Protection response capacity, and designing climate-resilient infrastructure**.
- As the Mediterranean region faces increasing climate-induced risks, it's crucial to reduce vulnerability and improve resilience to extreme weather events to safeguard human lives.

World Weather Attribution (WWA)

- WWA is a global consortium that **investigates the links between human-induced global warming and extreme weather events**.
- It provides timely and scientific information about the influence of climate change on such events.
- **Objective**: Inform policymakers, media, and the public, encouraging mitigation efforts.
- It has previously studied the 2022 heatwave in India and Pakistan, concluding that climate change made it 30 times more likely and intense.

UPSC Previous Year Practice Question

- Q.** Discuss global warming and mention its effects on the global climate. Explain the control measures to bring down the level of greenhouse gases which cause global warming, in the light of the Kyoto Protocol, 1997. **(UPSC CSE 2022)**
- Q.** The interlinking of rivers can provide viable solutions to the multi-dimensional inter-related

problems of droughts, floods and interrupted navigation. Critically examine. **(UPSC CSE 2020)**
Q. Account for the huge flooding of million cities in India including the smart ones like Hyderabad and Pune. Suggest lasting remedial measures. **(UPSC CSE 2020)**

MCQs

Q. "Climate Action Tracker" which monitors the emission reduction pledges of different countries is a: (UPSC CSE 2022)

- Database created by coalition of research organisations
- Wing of "International Panel of Climate Change"
- Committee under "United Nations Framework Convention on Climate Change"
- Agency promoted and financed by United Nations Environment Programme and World Bank

Answer: (a)

Q. La Nina is suspected to have caused recent floods in Australia. How is La Nina different from El Nino? (UPSC CSE 2011)

- La Nina is characterized by unusually cold ocean temperature in equatorial Indian Ocean whereas El Nino is characterized by unusually warm ocean temperature in the equatorial Pacific Ocean.
- El Nino has adverse effect on south-west monsoon of India, but La Nina has no effect on monsoon climate.

Which of the statements given above is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Answer: (d)

India And The Northern Sea Route #Important _ Trade _ Routes

Priority: Medium

Primary Source: The Hindu

Relevance: Distribution of key natural resources across the world (including South Asia and the Indian subcontinent); Important Transport Routes

Prepp Prelims Booster: Mapping, Northern Sea Route

Prepp Mains Booster: Issues Related to the Northern Sea Route

Context:

- This article discusses the North Sea route, its importance for India, and the opportunities and challenges presented by it.
- In 2023, **almost 35% of the 8 million tonnes of cargo handled by Murmansk port in northwest Russia was for India.**



What is the Northern Sea Route?

- The Northern Sea Route or NSR is the **shortest shipping route for freight transportation between Europe and the Asia-Pacific region.**
- It is around 5,600 km long and **extends between the Barents and the Kara Seas** (Kara Strait) and **ends in the Bering Strait** (Provideniya Bay).
- The NSR is around half the distance covered by currently used shipping lanes such as the Suez Canal which can lead to **savings as high as 50%.**
- The blockage of the Suez Canal in 2021 by Ever Given** raised the need for an alternate route to the Suez.

Advantages

Goeconomic benefits:

- It can become a global energy superhighway for the transport of various natural resources like hydrocarbons, from the Arctic.
- It can help establish strong supply networks to the Arctic which will ensure the uninterrupted flow of cargo.
- As the NSR is entirely within the Russian EEZ, it can help Russia gain more influence on the global stage.

Economically profitable:

- The reduced distance of the route leads to fuel savings and reduced costs for staff labor and chartering vessels.
- The Northern Sea Route does not charge payments for passage**, unlike the Suez Canal.
- There are **no queues in the NSR** like in the Suez Canal.
- The NSR is **also free from piracy** which affects the Suez Canal.

Challenges

- The Arctic region is not a hospitable environment and is becoming progressively more unstable as global warming continues.

- The **surface temperatures in the region are rising twice as fast** as in other regions of the world.
- The stability of the **polar vortex** is reducing due to the frequent occurrences of extreme cold in Russia and Europe,
- The unusual **jet stream patterns** are also altering the paths of the northern storms in the region.
- The unpredictable weather conditions impact the working of ships and workers, search-and-rescue resources, and infrastructure.
- The **shallow depth** of the **Laptev Strait** restricts the size of ships that can pass through the route.
- The NSR is minimally policed leading to concerns over its use for the transport of illegal goods, weapons, etc.
- The region has become **another site of geopolitical contest between Russia and NATO** on account of the presence of what is believed to be one-fourth of the world's untapped petroleum reserves.

Why is the Arctic region significant to India?

- The Arctic Region, including the Arctic Circle, the Arctic Ocean, and the North Pole, is vulnerable to the unprecedented nature of climate change.
- This could have a direct impact on India's economic security, water security, and sustainability.
- It is the **largest unexplored prospective area for hydrocarbons** with estimates of over 40% of the current global reserves of oil and gas and significant reserves of coal, zinc, and silver.
- However, the government's [Arctic Policy of 2022](#) mentions that the country's approach to economic development of the region is guided by [UN Sustainable Development Goals](#).

How old is India's engagement with the Arctic?

- India's relationship with the Arctic began with the signing of the **Svalbard treaty in 1920**.
- India is performing scientific studies and research in atmospheric, biological, marine, hydrological, and glaciological studies in the region.
- India set up the **Himadri research station at Ny-Ålesund, Svalbard, in 2008**, a multi-sensor moored observatory in 2014, and the northernmost atmospheric laboratory in 2016.
- **India became an observer state in the Arctic Council in May 2023**.

How is Russia making the NSR navigable?

- Russia is using [nuclear-powered icebreaker fleet](#), which is operated by **FSUE Atomflot**, a subsidiary of Rosatom State Nuclear Energy

Corporation which is the NSR infrastructure operator.

What are the driving factors for India to Participate in the NSR development?

- **Rising trade:** The growth in cargo traffic along the NSR was around 73% between 2018 and 2022 and is continuously rising.
- India's imports of record amounts of oil and coal from Russia in recent years have been made possible by the reliable and safe NSR.
- **Geographical positioning:** The majority of India's trade is via the sea route.
- Therefore, the NSR which is shorter, safer, and thus cheaper than routes such as the Suez Canal is a viable prospect for India.
- **Chennai-Vladivostok Maritime Corridor (CVMC) project:** The **Chennai-Vladivostok Maritime Corridor** is directly linked to the organized shipping terminal through the NSR.
- The CVMC, which **passes through the Sea of Japan, the South China Sea, and the Malacca strait** is around 10,500 km long as compared to the currently used Mumbai-St. Petersburg route which is 16,000 km long.
- The CVMC route will reduce the transit time from Russia to India by one-third to 12 days.
- **Chinese influence:** The strong partnership and alliance between Russia and China could extend to the Arctic region.
- This is a major concern for India due to its geopolitical tensions with China and its reliance on the NSR for cheap, safe, and efficient transport of its exports and imports.

What lies forward?

- The NSR development plan which was approved by the Russian government in 2022 set a cargo traffic target of 80 million tonnes and 150 million tonnes for 2024 and 2030 respectively.
- In March 2023, a Russian delegation held meetings with the Indian business community on the development of the NSR, and Indian partnerships in the NSR and promised to ensure the year-round operation of the route.

Murmansk Port

- The **Murmansk seaport** is one of the **largest ice-free ports** in Russia and is situated in Murmansk, the largest Russian city north of the Arctic Circle.
- It was **established in 1916** as a supply point for the Russian military during World War I.
- It is located on the **Kola Peninsula** on the coast of the Barents Sea, around 2,000 km northwest of Moscow.

- It is capable of year-round navigation due to its ice-free waters and there are no restrictions on vessels that can call at the port.
- It is a crucial gateway to the Arctic region and an important node along the Northern Sea Route.



- It plays an important role in the exports of minerals, oil, gas, and other resources due to its proximity to deposits of these resources.
- The port which has strong links to rail, road, and pipeline-based transportation networks is a transit hub for imports and exports.

UPSC Previous Year Practice Question

Q. Mention the significance of straits and isthmus in international trade. (UPSC CSE 2022)

Environment (GS Paper Prelims) & GS Paper III (Main)

What To Do With Spent Nuclear Fuel?

#Important_Energy_Resources #Clean_Energy
#Nuclear_Energy #Environmental_Pollution

Priority: High



Primary Source: The Hindu

Relevance: Conservation, environmental pollution and degradation, environmental impact assessment. Science and Technology- developments and their applications and effects in everyday life.

Prepp Prelims Booster: Nuclear Fuel and associated issues

Prepp Mains Booster: Issues Related to Safe Disposal of Nuclear Waste

Context:

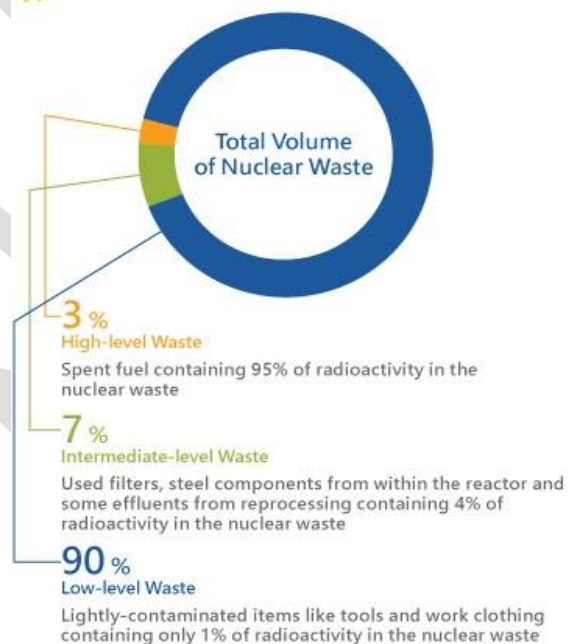
- Recently, the **Fukushima Daiichi** nuclear plant, damaged by an earthquake and tsunami in 2011, began to release treated radioactive water into the Pacific Ocean.
- This article discusses the various ways to dispose of the used nuclear fuel in a safe and controlled manner.

Nuclear fuel

- Nuclear energy is a **viable alternative to carbon-based energy** sources such as fossil fuels.
- It can contribute towards climate change mitigation.
- Presently **only 10% of global energy production is from nuclear energy sources** but countries are planning to increase the share of nuclear energy in power generation.
- This is because it is an efficient path in the transition to clean energy sources.
- The U.S.A., Switzerland, Spain, Sweden, and Finland are all planning to build new or update existing nuclear reactors, while India, China, and Russia are working on expanding their nuclear power projects.

To learn more about nuclear fuel, click the [link](#).

Types of Nuclear Waste



How can spent nuclear fuel be disposed of?

- Used nuclear fuel is kept in either wet or dry storage facilities, before being recycled or disposed of.
- When used fuel is taken out of a reactor, it is both hot and radioactive and requires storage in water to allow the fuel to cool.
- The fuel can be kept in wet storage, or transferred into a dry facility after a period of initial cooling.
- Keeping the used fuel in temporary storage to allow both the heat and radioactivity to diminish makes recycling and disposal easier.

For low-level waste

- The spent fuel can be stored in pools until they cool and in dry casks which can be buried in near-surface disposal facilities at ground level or below.

- Such facilities are generally equipped with a protective covering that is a few meters thick.
- The waste is then **placed in vaults and backfilled with soil and clay**.
- The volume is then covered with an impermeable material followed by topsoil.
- Such facilities are usually used for waste with low-level and intermediate-level radioactivity, i.e. those from an operating plant.

For high-level waste

- **Deep geological disposal** is considered to be the most feasible method to dispose of high-level waste.
- The Onkalo repository, Finland scheduled to open in 2025 will become the first facility to implement this method.
- It will use the Swedish KBS-3 concept in which there are three layers of protection.
- The waste is placed in copper canisters which are wrapped in bentonite clay and buried more than 400 metres below ancient bedrock.
- The repository also has safety measures called release barriers which are to keep the waste isolated from its surroundings.
- The facility will take 100-120 years to become full according to manufacturers, Posiva.
- Finland plans to leave the waste undisturbed for 100 millennia, while also studying how the site might change and how the safety measures evolve.
- E.g.: The tunnels where the waste is stored have already been checked to assess if they will be able to weather geological changes like an ice age or earthquakes.



Other methods

- **Recycling**: Although some countries like the U.S.A. treat used nuclear fuel as waste, approximately 97% of it could be used as fuel in certain types of reactors.
- However, **recycling has largely focused on the extraction of plutonium and uranium which can**

be reused in conventional reactors after mixing with fresh uranium to make new fuel rods.

- Plutonium recycling is used for electricity generation in France, Japan, Germany, Belgium, and Russia.
- This also **reduces the radiological footprint** of their waste although some by-products must be disposed of via a repository for which they are immobilized by mixing with glass, i.e. **vitrification**
- Another method is the storage of nuclear waste under the ocean, which is a kind of geologic disposal.
- However, this method has a higher risk of the material leaking and spreading in the ocean.
- It will also be more difficult to monitor, making the control and management of nuclear waste challenging.

Why is the safe disposal of nuclear fuel necessary?

- Nuclear power produces a large amount of energy from a very small amount of fuel.
- It also produces a very limited amount of waste during this process.
- However, this waste is mostly radioactive and must be carefully managed as it is extremely hazardous.
- Toxic waste needs to be dealt with safely because of its radioactivity and toxicity.
- Safe disposal of nuclear fuel is necessary to protect people and the environment.

UPSC Mains Practice Questions

Q.1) Give an account of the growth and development of nuclear science and technology in India. What is the advantage of a fast breeder reactor programme in India? **(UPSC GS3 2019)**

Q.2) With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. **(UPSC GS3 2018)**

MCQs

Question: To meet its rapidly growing energy demand, some opine that India should pursue research and development on thorium as the future fuel of nuclear energy. In this context, what advantage, does thorium hold over uranium? **(UPSC CSE 2012)**

1. Thorium is far more abundant in nature than uranium.
2. On the basis of per unit mass of mined mineral, thorium can generate more energy compared to natural uranium.

3. Thorium produces less harmful waste compared to uranium.

Which of the statements given above is/are correct?

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

Answer: (d)

In the year 2007, an earthquake led to massive radioactive water leakage in the largest nuclear plant in the world. In which country did it occur?

(UPSC CSE 2008)

- (a) Germany
- (b) Canada
- (c) Japan
- (d) USA

Answer: (c)

How Invasive Species Are Costing Global Economy Billions Annually #Econology #Invasive_Species

Priority: Medium 

Primary Source: Indian Express

Relevance: Environmental Protection

Prepp Prelims Booster: Invasive Species

Prepp Mains Booster: Issues Related To Invasive Species

Context

- Recently, a **United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)** report revealed that invasive species are inflicting an annual economic toll exceeding \$400 billion on the global economy.

What are Invasive Species?

- Invasive species are **non-native organisms** such as animals, plants, fungi, and microorganisms that grow and spread quickly, **endangering native organisms**, ecosystems, and human health.
- Invasive species once established, they can **disrupt the balance of the ecosystem**, leading to negative consequences such as the displacement of native species, harm to **infrastructure, and potential risks** to both human well-being and livelihoods.
- They can manifest as destructive crop or forest pests, for example, destroying native plants and animals.
- Invasive mosquitos can **spread diseases such as dengue fever, malaria, Zika, and West Nile, endangering human health.**

Findings of the Report

The Scale of Alien Species Invasion

- There are approximately 37,000 alien species, encompassing both plants and animals, introduced to different regions and ecosystems worldwide due to human activities.
- Among these, more than 3,500 are considered invasive alien species, posing a significant threat to native biodiversity.

Extinction Crisis: The Invasive Alien Impact

- Invasive alien species have played a substantial role in **60% of recorded global plant and animal extinctions**, marking them as one of the top five direct drivers of biodiversity loss.

Escalating Economic and Environmental Costs

- The annual costs related to invasive alien species have been on the rise, quadrupling each decade since 1970. In **2019, the global economic burden of these species exceeded \$423 billion annually.**

Negative Consequences for Ecosystems and Livelihoods

- Nearly 80% of the documented impacts of invasive species on nature's contributions to human well-being are adverse.
- Invasive alien species can wreak havoc on ecosystems, disrupt native species, and harm human livelihoods.

Introduction Routes: Perceived Benefits Leading to Harm

- Many invasive alien species have been intentionally introduced for perceived benefits, including purposes like forestry, agriculture, horticulture, aquaculture, or as pets, often without adequate consideration of their potential negative impacts.

Common Impacts: Threats to Food Supply and Ecosystems

- The most common impact of invasive species is the reduction of food supply, affecting local fisheries and agriculture.
- Invasive species can also spread diseases and disrupt ecosystems.

Geographic Patterns: Impacts Across the Globe

- Invasive alien species are reported in various regions, with 34% of their impacts in the Americas, 31% in Europe and Central Asia, 25% in Asia and the Pacific, and around 7% in Africa.
- Islands are particularly vulnerable, with more than 25% of them now having more alien plants than native plants.

Invasive Species and Climate Change: A Dual Threat

- Climate change can potentially facilitate the expansion of invasive species by increasing their

competitive abilities and expanding suitable habitats.

- Simultaneously, invasive species can exacerbate the impacts of climate change, further complicating the ecological balance.

Illustrative Examples: Real-World Consequences

- Invasive species have been linked to catastrophic events such as **wildfires in Hawaii, intensified by invasive grasses.**
- The spread of diseases **like dengue and Zika by invasive mosquitoes** is a growing concern.
- Fishing grounds have been depleted due to **invasive water hyacinths**, impacting both the environment and livelihoods.
- The proliferation of invasive alien species poses a global threat, with far-reaching ecological, economic, and human implications. Understanding their impact and enacting preventative measures is essential for preserving biodiversity and ecosystems worldwide.

How is the Global Response?

- Most countries (80%) have included targets related to managing invasive alien species in their national biodiversity plans.
- However, **only 17% specifically address the issue in national legislation**, while more (69%) include it as a part of legislation in other areas.
- Alarmingly, nearly half of all countries (45%) do not invest in the management of biological invasions.

Preventive Measures and Global Commitment

- Border biosecurity measures and import controls can significantly reduce the introduction of these harmful species.
- Governments worldwide pledged to reduce the introduction of priority invasive species by 50% by 2030 as part of the **Kunming-Montreal Global Biodiversity Framework.**

MCQs

Question: Invasive Species Specialist Group' (that develops Global Invasive Species Database) belongs to which one of the following organizations? (UPSC CSE 2023)

- The International Union for Conservation of Nature
- The United Nations Environment Programme
- The United Nations World Commission for Environment and Development
- The World Wide Fund for Nature

Answer: (a)

Question: The Himalayan Range is very rich in species diversity. Which one among the following

is the most appropriate reason for this phenomenon? (UPSC CSE 2011)

- It has a high rainfall that supports luxuriant vegetative growth.
- It is a confluence of different bio-geographical zones.
- Exotic and invasive species have not been introduced in this region.
- It has less human interference.

Answer: (b)

G20 Summit: India Launched Global Biofuel Alliance
#Biofuel #Sustainable_Development

Priority: High



Primary Source: Down To Earth

Relevance: Conservation, Environmental Pollution & Degradation, Important International Alliances and Institutions

Prepp Prelims Booster: G-20, Global Biofuels Alliance,

Prepp Mains Booster: Significance of Biofuel Alliance

Context

- Recently, at the G20 summit, Prime Minister Narendra Modi launched the Global Biofuel Alliance.
- This alliance, supported by 19 countries and 12 international organizations, aims to triple sustainable biofuel production worldwide by 2030.

What is Biofuel?

- Biofuels are renewable energy sources derived from biomass, such as crop stubble, plant waste, and municipal solid waste.
- Biofuels may be solid, liquid or gaseous in nature.
 - **Solid:** Wood, dried plant material, and manure
 - **Liquid:** Bioethanol and Biodiesel
 - **Gaseous:** Biogas

Biofuels in India

- India, a significant oil importer, is focused on enhancing its biofuel production capacity, primarily utilizing sources like sugarcane and agricultural waste.
- India's goals include increasing the **ethanol blend in petrol to 20% by 2025 and establishing compressed biogas (CBG) plants.**
- These efforts represent India's commitment to harnessing renewable energy sources from biomass and reducing its dependence on fossil fuels for a more sustainable energy future.
- Biofuels in India are of strategic importance as it augurs well with the ongoing initiatives of the Government such as **Make in India, Swachh**

Bharat Abhiyan, Skill Development and offers great opportunity to integrate with the ambitious targets of doubling of Farmers Income, Import Reduction, Employment Generation, Waste to Wealth Creation.

India's Biofuel Achievement

- In the fiscal year 2020–21, India produced 4.08 billion litres of ethanol, achieving a blending rate of 10.02% and resulting in a reduction of 2.7 million tonnes of CO₂ emissions.
- India achieved the target of **10% ethanol blending in 2022** and saved as much as ₹53,894 crore in forex outgo from 10% blending besides benefiting the farmers.
- India actively promotes **Compressed bio-gas (CBG)** derived from waste through the **Sustainable Alternative towards Affordable Transportation (SATAT) program**.
- India aims to install 5,000 CBG plants across the country by 2024.

Significance of Global Biofuels Alliance

- The Global Biofuels Alliance holds great significance as it is dedicated to advancing sustainable biofuels, particularly in the transportation sector.
- The key objectives of the alliance include promoting sustainable biofuels, strengthening circular economy practices, and offering cost-effective and environmentally friendly alternatives to traditional fuels.
- This initiative represents a collaborative effort to address global energy and environmental challenges while reducing the carbon footprint associated with energy production and consumption.
- India has set an ambitious target of achieving net-zero emissions by the year 2070, and the Global Biofuels Alliance plays a pivotal role in helping India, along with other nations, work towards this critical environmental goal.

India's Initiatives Regarding Biofuels

- **SATAT:** Under the Sustainable Alternative Towards Affordable Transportation (SATAT) initiative, it aims to set up 5,000 BioCNG plants with a production target of 15 MMT by 2023–24.
- **GOBAR-dhan Scheme:** Under this scheme, the Ministry of New and Renewable Energy is setting up 500 new compressed biogas (CBG) plants.
- **Samarth Scheme:** The Ministry of Power's aims for 5 to 7% of co-firing biomass pellets, going up to 10% and then up to 20% for all coal power being produced from carbon-neutral biomass utilising farm agri-residue.

- **Pradhan Mantri JI-VAN Yojana:** The objective of the scheme is to create an ecosystem for setting up commercial projects and to boost Research and Development in the 2G Ethanol sector.
- **Ethanol Blending:** The Ministry of Petroleum and Natural Gas (MoPNG) is targeting 20 per cent ethanol blending in petrol by 2025.
- **Repurpose Used Cooking Oil (RUCO):** It was launched by **Food Safety and Standards Authority of India (FSSAI)** and aims for an ecosystem that will enable the collection and conversion of used cooking oil to biodiesel.
- India plans to mandate a one per cent blending of **Sustainable Aviation fuel with conventional jet fuel for all Indian airlines by 2025**.
- **Swachh Bharat Mission-Urban 2.0:** Under the ambit of this mission, for management of organic/wet fraction of municipal solid waste biomethanation plants across cities was proposed in the Budget 2023–2024.
- **National Policy on Biofuels, 2018:** The policy aims to reduce petroleum imports by promoting domestic fuel production.

MCQs

Question: It is possible to produce algae-based biofuels, but what is/are the likely limitation(s) of developing countries in promoting this industry? **(UPSC 2017)**

1. Production of algae-based biofuels is possible in seas only and not on continents.
2. Setting up and engineering the algae-based biofuel production requires a high level of expertise/technology until the construction is completed.
3. Economically viable production necessitates the setting up of large-scale facilities which may raise ecological and social concerns.

Select the correct answer using the code given below:

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

Answer: (b)

Question: According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? **(UPSC 2020)**

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram

5. Rotten potatoes

6. Sugar beet

Select the correct answer using the code given below:

(a) 1, 2, 5, and 6 only

(b) 1, 3, 4, and 6 only

(c) 2, 3, 4, and 5 only

(d) 1, 2, 3, 4, 5 and 6

Answer: (a)

Question: Consider the following statements:

1. Moringa (drumstick tree) is a leguminous evergreen tree.

2. Tamarind tree is endemic to south Asia.

3. In India, most of the tamarind is collected as minor forest produce.

4. India exports tamarind and seeds of moringa.

5. Seeds of moringa and tamarind can be used in the production of biofuels.

Which of the statements given above are correct?

(a) 1, 2, 4 and 5

(b) 3, 4 and 5

(c) 1, 3 and 4

(d) 1, 2, 3 and 5

Answer: (b)

Deoxygenation On Riverine Ecosystems #Ecosystems #Riverine_Ecosystems

Priority: Medium



Primary Source: Down To Earth

Relevance: Environmental Pollution and Degradation

Prepp Prelims Booster: Concept of Deoxygenation

Prepp Mains Booster: Issues related to deoxygenation and warming of rivers

Context

- Recently, a study published in the journal **Nature Climate Change**, revealed that **rivers are warming and losing oxygen faster than oceans**.
- The study shows that of **nearly 800 rivers, warming occurred in 87% and oxygen loss occurred in 70%**.



How was the research conducted?

- The research was led by Pennsylvania State University's research team, who used artificial intelligence and deep learning approaches to reconstruct historically sparse water quality data from nearly 800 rivers across the U.S. and central Europe.
- It was found that **rivers are warming up and deoxygenating faster than oceans**, which could have serious implications for aquatic life and the lives of humans.
- To conduct their analysis, the researchers trained a computer model on a vast range of data from annual precipitation rates to soil type to sunlight, for 580 rivers in the United States and 216 rivers in Central Europe.

Findings of the study

- Widespread Deoxygenation:** The study found that rivers are experiencing deoxygenation at a rate faster than oceans. Specifically, nearly **70%** of the 800 rivers studied in the United States and Central Europe showed oxygen loss.
- Rapid Warming:** In addition to deoxygenation, the research revealed that **87% of the rivers studied were experiencing warming**. This indicates that river temperatures are rising.
- Urban vs. Rural Differences:** **Urban rivers exhibited the most rapid warming, while rural rivers showed slower warming but faster deoxygenation**. This suggests that human activities and urbanization may play a significant role in these trends.
- Future Projections:** The study projected that **future deoxygenation rates in these rivers could be between 1.6 and 2.5 times higher than historical rates**. This suggests that the problem is likely to worsen in the coming years.
- Immediate Threat to Aquatic Life:** **Low oxygen levels in rivers pose an acute threat to aquatic species**. The study warns that within the next 70 years, certain fish species could face extinction due to prolonged periods of low oxygen.
- Implications for Water Quality and Ecosystems:** The findings have significant implications for the quality of river water and the overall health of riverine ecosystems. Deoxygenation can disrupt the balance of aquatic life and ecosystem functioning.
- Challenges in Understanding:** The study highlighted that riverine water temperature and dissolved oxygen levels, crucial indicators of water quality and ecosystem health, are poorly understood due to a lack of consistent data and

the complexity of variables affecting oxygen levels in watersheds.

- **Comparison to Coastal Dead Zones:** It draws a parallel between the **deoxygenation observed in rivers and the creation of dead zones often seen in coastal areas like the Gulf of Mexico**. This implies that some rivers may no longer sustain life as they did in the past.

What are the causes of deoxygenation?

- **Eutrophication (Nutrient Run-off and Sewage Pollution):** It is a major contributor to deoxygenation in coastal waters. **It results from increased nutrient run-off from agricultural activities, sewage discharge, and land pollution.**
- **Excessive nutrients, particularly nitrogen and phosphorus, stimulate the growth of algae and phytoplankton.**
- As these organisms die and decompose, oxygen is depleted from the water, leading to **"dead zones" with very low oxygen levels.**
- **Nitrogen Deposition from Fossil Fuel Burning:** The burning of fossil fuels releases **nitrogen oxides (NOx)** into the atmosphere. These nitrogen compounds can be deposited into oceans through atmospheric deposition and runoff.
- **Widespread Impacts from Ocean Warming:** Ocean warming, driven by climate change, is a significant factor contributing to deoxygenation. As the ocean temperature increases, water holds less dissolved oxygen.
- **Acidification and CO₂ Emissions:** Anthropogenic **carbon dioxide (CO₂) emissions** are a key driver of ocean acidification, which is closely linked to deoxygenation. Elevated CO₂ levels reduce the pH of seawater, making it more acidic.

Impact on Marine Life

- **Threatening fish species:** Low oxygen zones in the ocean **can lead to huge fish kills**, with thousands of fish washing up dead on the shore. Lower oxygen levels in rivers have also been seen to result in huge masses of fish floating dead on the river surface.
- **For example:** Earlier this year, receding flood waters resulted in such **low oxygen levels that the Darling River near the Australian town of Menindee became clogged with millions of fish.**
- **Increase in Greenhouse Gas:** Declining oxygen can also lead to increased amounts of greenhouse gases being released from the river and toxic metals being produced.
- **The researchers' model also showed that many species of fish could die out completely as a**

result of the oxygen loss and warming temperatures in the rivers over the next 70 years.

- **Reduced Growth Rate:** **Marine species may experience slower growth rates due to limited oxygen availability**, affecting their development and overall health.

What can be done?

- **Reducing Carbon Emissions:** One of the primary causes of oxygen loss in the oceans is global warming driven by greenhouse gas emissions, and to slow down and potentially reverse this trend, it's crucial to **significantly cut carbon dioxide emissions.**
- **Mitigating Greenhouse Gas Emissions: Slowing down ocean deoxygenation** can be achieved by mitigating greenhouse gas emissions, which will require global efforts to transition to cleaner energy sources and reduce reliance on fossil fuels.
- **Addressing Nutrient Pollution: Nutrient runoff from agriculture and sewage effluents contributes to oxygen depletion in coastal waters.** To tackle this problem, solutions should be tailored to local needs and economies.
- **Protecting Marine Ecosystems:** It's essential to better protect marine ecosystems, as this can help **conserve marine genetic biodiversity and promote the recovery of ocean life.** However, this should be coupled with significant reductions in carbon dioxide emissions to be truly effective.

MCQs

Question: Other than poaching, what are the possible reasons for the decline in the population of Ganges River Dolphins? **(UPSC CSE 2014)**

1. Construction of dams and barrages on rivers
2. Increase in the population of crocodiles in rivers
3. Getting trapped in fishing nets accidentally
4. Use of synthetic fertilizers and other agricultural chemicals in crop-fields in the vicinity of rivers

Select the correct answer using the code given below.

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

Answer: (c)

Global Biodiversity Framework Fund (GBFF) Is Now Operational #Climate_Funds #GBFF

Priority: Medium 

Primary Source: Down To Earth

Relevance: Conservation, environmental pollution and degradation, environmental impact assessment

Prepp Prelims Booster: Global Biodiversity Framework Fund

Prepp Mains Booster: Issues Related to the Global Biodiversity Framework Fund and GEF

Context

- Recently, Germany pledged to contribute 40 million euros to the Global Biodiversity Framework Fund (GBFF) in a high-level event named 'Nature and People: From Ambition to Action' which is organised in the sideline of the ongoing **78th session of the United Nations General Assembly in New York**.

Major outcomes of the event

- Germany pledged to contribute 40 million euros to the Global Biodiversity Framework Fund (GBFF)**. The fund is operational because the condition of '\$200 million from at least three donors by December 2023 to be operational' is fulfilled now.
- New Caledonia pledged to strictly protect 10 percent of its maritime space by the end of 2023.
- An additional 114,900 hectares of marine ecosystems across Comoros, St Lucia and Vanuatu would be restored under the Small Island Developing States (SIDS) Ecosystem Restoration Flagship project.
- Community Land Rights and Conservation Finance Initiative (CLARIFI), received 5 million euros from Germany to boost **the role of indigenous peoples and local communities (IPLC)** in decision-making on nature conservation.
- The GBFF was ratified in August 2023 at the **Global Environment Facility** Assembly but needed \$200 million from at least three donors by December 2023 to be operational. At the Assembly itself, Canada committed 200 million Canadian dollars and the United Kingdom committed 10 million GBP but this still left a shortfall of \$40 million.

What is Kunming-Montreal Global Biodiversity Framework and GBFF?

- It was adopted during the 15th Conference of Parties (COP15) to the UN Convention on Biological Diversity.
- There are 4 goals and 23 targets to achieve by 2030 according to KMGFF.

4 Goals are as follows:

- **Halting human-induced extinction of threatened species and reducing the rate of extinction of all species tenfold by 2050**
- **Sustainable use and management of biodiversity to ensure that nature's contributions to people are valued, maintained and enhanced**
- **Fair sharing of the benefits from the utilisation of genetic resources, and digital sequence information on genetic resources**
- **Adequate means of implementing the GBF be accessible to all Parties, particularly Least Developed Countries and Small Island Developing States.**

Major Targets of the framework are as follows:

- Effective conservation and management of at least **30 percent of the world's land, coastal areas and oceans**.
- **Restoration of 30 percent of terrestrial and marine ecosystems**
- Reduce to **near zero the loss of areas of high biodiversity importance and high ecological integrity**
- **Halving global food waste**
- **Phasing out or reforming subsidies** that harm biodiversity
- Mobilising at least **\$200 billion per year from public and private sources**
- Raising international financial flows from developed to developing countries to at least **US\$ 30 billion per year**
- It was requested that the Global Environment Facility set up a **Special Trust Fund – the Global Biodiversity Framework Fund** – to support the implementation of the GBF, in order to ensure an adequate, predictable and timely flow of funds.

What is Global Environment Facility?

- The Global Environment Facility has a unique governing structure organised around an Assembly, the Council, the Secretariat, 18 agencies, a Scientific and Technical Advisory Panel, and the Evaluation Office.
- The GEF serves as a financial mechanism for several environmental conventions such as **Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), Stockholm Convention on Persistent Organic Pollutants (POPs), UN Convention to Combat Desertification (UNCCD), and Minamata Convention on Mercury.**

What is Community Land Rights and Conservation Finance Initiative (CLARIFI)

- CLARIFI is a new international funding mechanism led by **RRI (Rights and Resources Initiative)** and Campaign for Nature.
- It aims to contribute to raising US\$10 billion by 2030 and strategically deploying public and private funds to scale up the formal recognition of Indigenous Peoples', Afro-descendant Peoples', and local communities' land rights, conservation, and sustainable management of their territories.

What is Small Island Developing States (SIDS) Group?

- **Small Island Developing States (SIDS)** are a distinct group of 39 States and 18 Associate Members of United Nations regional commissions that face unique social, economic and environmental vulnerabilities which are located in 3 geographical regions – the Caribbean; the Pacific; and the Atlantic, Indian Ocean and South China Sea (AIS).

MCQs

Question: With reference to 'Global Environment Facility', which of the following statements is/are correct? (UPSC CSE 2014)

- It serves as financial mechanism for 'Convention on Biological Diversity' and 'United Nations Framework Convention on Climate Change'
- It undertakes scientific research on environmental issues at global level
- It is an agency under OECD to facilitate the transfer of technology and funds to underdeveloped countries with specific aim to protect their environment
- Both (a) and (b)

Answer: (a)

Cement Industries: A major Emitter of GHG #Green_House_Gases #Cement_Industries #Environmental_Pollution #Global Warming

Priority: Medium



Primary Source: Down To Earth

Relevance: Environmental pollution and degradation, environmental impact assessment

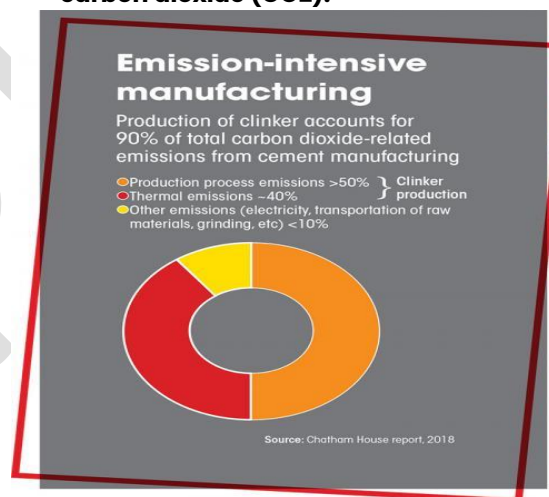
Prepp Prelims Booster: GHG emissions, Cement

Prepp Mains Booster: Issues Related to Greenhouse Gas Emissions and the Cement Industry

- According to the **International Energy Agency (IEA)**, Cement manufacturing industries are the second largest industrial emitter of carbon dioxide.
- And as it is the cheapest material to build infrastructure, the emission from these industries is increasing rapidly along with the growth of the infrastructure sector.

How has this industry become the major source of CO2 emission?

- During the production of cement limestone and clay are heated in a kiln at more **than 1,400°C in a process called pyro-processing**.
- Due to heating, **calcium carbonate (CaCO₃)**, the **principal constituent of limestone, breaks up to release CO₂**. This process is known as calcination.
- The remaining **calcium oxide (CaO)**, also known as **quicklime**.
- **Calcium oxide combines with aluminium silicates** present in clay to form calcium silicates.
- **Calcium Silicates** combined with ingredients like **gypsum** to produce cement.
- Thus, production of **1 kg of cement releases almost an equal amount—up to 0.8 kg—of carbon dioxide (CO₂)**.



- As shown in the above image, **more than 50 per cent of the CO₂ emissions from cement-making result from calcination**.
- Another part of CO₂ is released from burning of coal and other fossil fuels during pyro-processing.
- Apart from this use of electricity to run such heavy processes itself emits the CO₂.

What are the solutions to reduce CO2 emission From the cement industry?

- Decarbonizing the sector by using renewable energy where electricity is used.

Context

- Use of other types of cement which have low CO₂ emission factors.
- **Ordinary portland cement:** which primarily uses limestone, has the highest emission intensity—a tonne of it produces 0.84 tonne of CO₂.
- **Pozzolana portland cement:** in which a certain portion of fly ash from power plants replaces limestone. Emission intensity is - 0.58 tCO₂
- **Composite cement:** which is a combination of limestone, fly ash, slag and gypsum. Emission intensity is - 0.41 tCO₂
- **Portland slag cement:** in which some amount of slag from steel plants replaces limestone. Emission intensity is - 0.38 tCO₂
- By putting a carbon tax on coal and allowing for the use of fly ash the use of coal can be curbed.
- Substituting overall fuel requirement with alternative fuels like refuse-derived fuel (RDF), industrial waste and biomass etc.
- A 2018 report by the World Business Council for Sustainable Development, an organisation of more than 200 international companies, says that for a cement plant with a capacity of 1 million tonnes per annum, production of composite cement requires 57 per cent less raw material, 52 per cent less thermal energy and 34 percent less electrical energy when compared with the production of ordinary portland cement.
- As this substitution is done with industrial waste materials like fly ash or slag, it is doubly beneficial.
- IEA says the global cement industry must cut its CO₂ emission by 3 percent every year till 2030 to get on track to meet net-zero emissions by 2050.



Challenges in transition from old to new methods in the cements industries:

- High temperature demand during various processes in the industry is easily fulfilled by fossil fuels like coal.
- Substitution of raw material is not that easy due to lack of availability.
- Technological upgradation by changing the process is very much costly.

- Supply chain of the substitutes is not up to the mark to fulfil the demand which is growing rapidly.
- Use of electricity from renewable sources is still costly.
- Lack of proper policies and subsidies on using environment friendly fuels.

MCQs

Question: In India, in the overall Index of Industrial Production, the Indices of Eight Core Industries have a combined weight of 37.90%. Which of the following are among those Eight Core Industries?

(UPSC CSE 2012)

1. Cement
2. Fertilizers
3. Natural gas
4. Refinery products
5. Textiles

Select the correct answer using the codes given below:

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

Answer: (c)

Explanation:

- The eight core sectors are Coal, Natural Gas, Crude Oil, Refinery Products (such as Petrol and Diesel), Fertilisers, Steel, Cement and Electricity.

Therefore, option (c) is the correct answer.

GHG Emission Through Maritime Transport
#Green_House_Gases #Environmental_Pollution
#Global_Warming

Priority: Medium

Primary Source: Down To Earth

Relevance: Environmental pollution and degradation, environmental impact assessment

Prepp Prelims Booster: Maritime transport, GHG emissions, UNCTAD, IMO

Prepp Mains Booster: Issues Related to GHG Emissions and Maritime Transport

Context

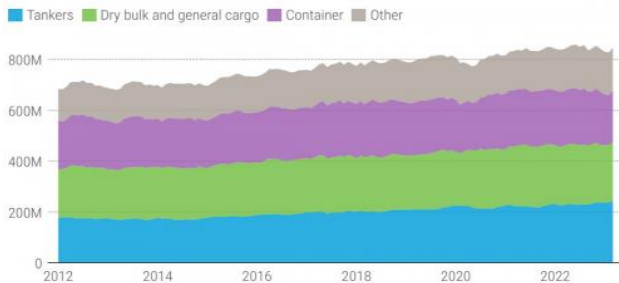
- According to the recently published '**Review of Maritime Transport 2023**' by the **United Nations Conference on Trade and Development (UNCTAD)**, **greenhouse gas (GHG)** emissions from international shipping were 20 per cent higher than 10 years earlier.
- In this article we will take a look at - Findings of this report; to know about UNCTAD and IMO; how

marine transport is emitting GHG; what are the solutions to reduce GHG from shipping; what are the challenges in this etc.



Shipping emissions are headed in the wrong direction

Carbon dioxide emissions by main vessel types, tons, 2012–2023



Note: The group "other" includes vehicles and roll-on/roll-off ships, passenger ships, offshore ships and service and miscellaneous ships.

Source: UNCTAD based on data provided by Marine Benchmark, June 2023.

Key findings of the report

- Shipping industry contributes to nearly **3% of global greenhouse gas** emissions.
- The GHG emission from marine transport has increased by 20 percent compared to last decade.
- Global maritime shipping volumes are projected to grow by **2.4 per cent in 2023**, which can further boost the GHG emission.
- More than half of the world's ships are over 15 years old which resulted in more emissions due to older and poor performing engines.

What is UNCTAD?

- The **United Nations Conference on Trade and Development is an intergovernmental organisation within the United Nations Secretariat** that promotes the interests of developing countries in world trade.
- UNCTAD is a permanent intergovernmental body headquartered at Geneva in Switzerland.
- Some of the reports published by it are:
 - Trade and Development Report
 - World Investment Report
 - The Least Developed Countries Report
 - Information and Economy Report
 - Technology and Innovation Report
 - Commodities and Development Report

How is marine transport responsible for GHG Emission?

- Along with **CO₂**, ships emit various global warming pollutants, including **black carbon (BC)**, **nitrogen oxides (NO_x)** and **nitrous oxide (N₂O)** produced by combustion of marine fuel.
- Vessels released more than **1.12 billion metric tons of carbon dioxide** in a year.
- The highest amounts of black carbon particles are produced by ships burning heavy fuel oil.

- Black carbon accounts for 21% of CO₂-equivalent emissions from ships, making it the second most important driver of shipping's climate impacts after carbon dioxide.
- A Graph on various aspects of Shipping emission can be seen below.

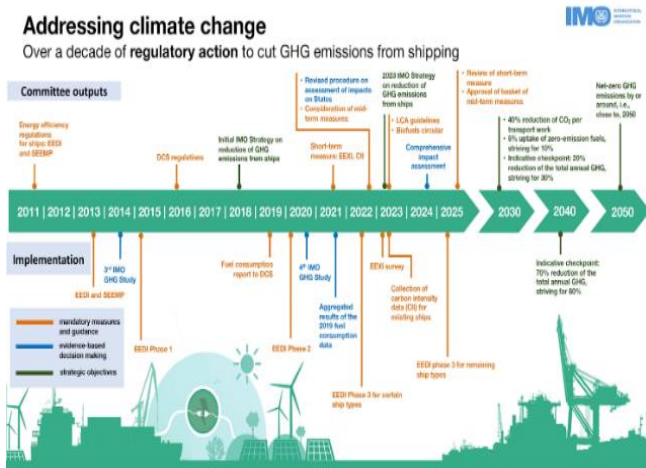
What are the solutions to reduce GHG Emission from Marine Transport?

- Alternative fuels, mainly **Liquefied Natural Gas (LNG)**, and to a lesser extent, battery/hybrid, **Liquefied Petroleum Gas (LPG)**, **Biofuels** and **Methanol**.
- 21 percent of vessels currently on order are designed to run on alternative fuels according to the report.
- Renewable ammonia is more suitable for the newer ships that have dual-fuel engines.
- Other fuel-based solutions can be found in the below image.



- The global maritime technology network (GMN) project, funded by the European Union, has established a network of five Maritime Technology Cooperation Centres (MTCCs) in Africa, Asia, the Caribbean, Latin America and the Pacific. To help countries develop national maritime energy-efficiency policies and measures.
- GreenVoyage-2050 project, a collaboration between IMO and the Government of Norway. The project, launched in 2019, will initiate and promote global efforts to demonstrate and test technical solutions for reducing shipping emissions.
- The **International Maritime Organization (IMO)** set a target to achieve near **net-zero GHG emissions (70% reduction)** by around 2050.

- IMO is revising its existing carbon intensity regulations
- **Energy Efficiency Existing Ship Index (EEXI):** It limits the technical carbon intensity of the ship by limiting how much carbon dioxide the ship is designed to emit based on its size and ship type.
- **Carbon Intensity Indicator (CII):** It grades ships from A-E based on their operational carbon intensity, based on how much fuel the ships use each year.
- IMO is developing new regulations called as “mid-term measures.”
- These measures will include a technical element, most likely a **Greenhouse Gas Fuel Standard (GFS)**, as well as an economic element, such as a **carbon levy**, a **feebate system**, or **cap-and-trade** etc.
- [IMO GHG strategy](#) can be seen in the below image.



What is IMO?

- IMO – the International Maritime Organization – is the United Nations specialised agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.
- The four pillars of IMO are as follows :
 - **the International Convention for the Safety of Life at Sea (SOLAS)**
 - **International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)**
 - **International Convention for the Prevention of Pollution from Ships (MARPOL)**
 - **Maritime Labour Convention (MLC)**

What are the issues in switching to Green Fuel?

- Only 1.2 per cent are using alternative fuels because of lack of availability and very high cost.

- Ship owners face the conundrum of renewing their fleet without clarity on technology and regulatory regimes.
- Port terminals also face similar challenges regarding technological upgradation and investment requirements.
- **Decarbonising the world’s fleet by 2050 could require \$8 billion to \$28 billion annually**, so to collect such a huge fund is the major concern.

MCQs

Question: What is ‘Greenhouse Gas Protocol’? (**UPSC CSE 2016**)

- It is an international accounting tool for government and business leaders to understand, quantify and manage greenhouse gas emissions
- It is an initiative of the United Nations to offer financial incentives to developing countries to reduce greenhouse gas emissions and to adopt eco-friendly technologies
- It is an inter-governmental agreement ratified by all the member countries of the United Nations to reduce greenhouse gas emissions to specified levels by the year 2022
- It is one of the multilateral REDD+ initiatives hosted by the World Bank.

Answer: (a)

‘Methane Emissions in Livestock and Rice Systems’: A Report Published by FAO #Green_House_Gases #Global_Warming #Environmental_Pollution

Priority: High



Primary Source: Down To Earth

Relevance: Conservation, environmental pollution and degradation, environmental impact assessment

Prepp Prelims Booster: Methane emissions in livestock and rice systems: Sources, quantification, mitigation and metrics’ report, FAO

Prepp Mains Booster: Issues Related To Methane Emissions

Context

- ‘Methane emissions in livestock and rice systems: Sources, quantification, mitigation and metrics’ report was published by FAO recently.
- The report gave the information about the sources and sinks of methane gas, outlines how emissions can be measured, describes a broad sampling of mitigation strategies and evaluates the kind of metrics that can be used to measure both emissions and their mitigation on the climate system.

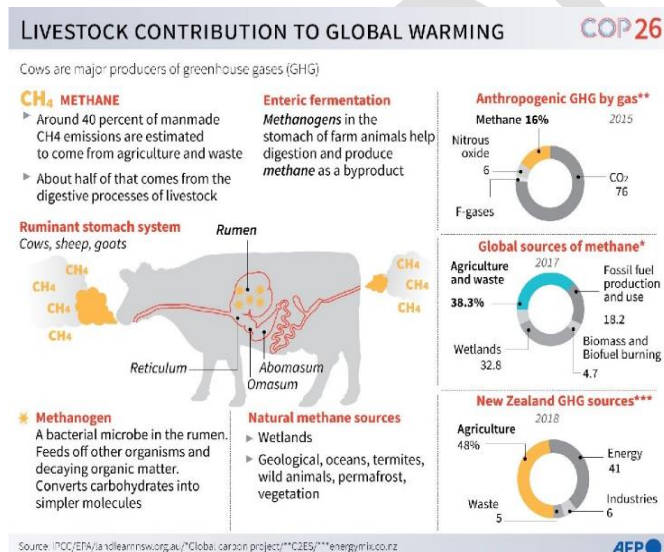
[Key observations of the report](#)

- About **32 per cent of global anthropogenic methane emissions result from microbial processes that occur during the enteric fermentation of ruminant livestock and manure management systems, while another 8 per cent comes from rice paddies.**
- Among ruminants, the highest daily emitters on a per animal basis are cattle, followed by sheep, goats and buffalo.
- **Methane emissions from anthropogenic activities currently contribute about 0.5 degrees Celsius to observed global warming.**
- Besides agrifood systems, other human activities that generate methane emissions include landfills, oil and natural gas systems, coal mines and more.
- Report has focused on the 2 main sources i.e Ruminants and Paddy fields.

About Methane

- Methane (CH₄) is a colorless, tasteless, and combustible gas and the primary element of natural gas.
- Methane is a short-lived greenhouse gas (GHG), which has an atmospheric lifetime of around a decade, as against the dominant GHG carbon dioxide.
- **Methane is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere.**

How do cows and other animals are responsible For methane emission?

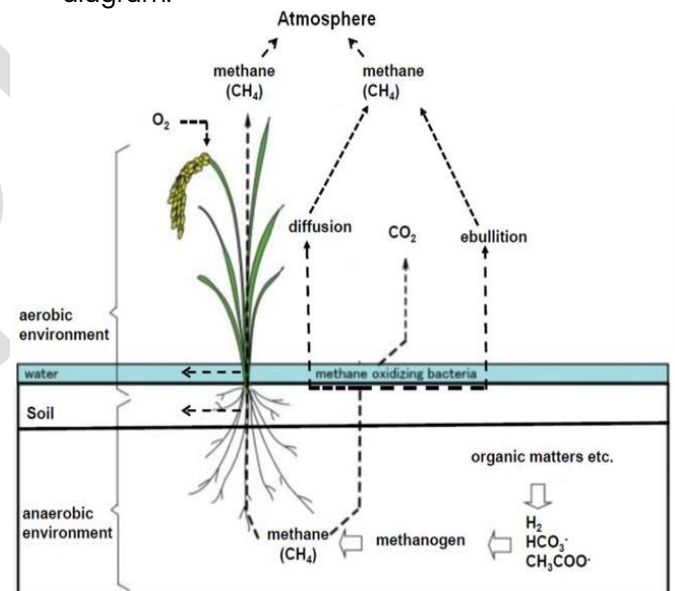


- Ruminant animals such as cows, sheep, goats, and buffaloes release this methane mainly through burping.
- They have a special type of digestive system that allows them to break down and digest food that non-ruminant species would be unable to digest.

- Stomachs of ruminant animals have four compartments, one of which, the rumen, helps them to store partially digested food and let it ferment.
- This partially digested and fermented food is regurgitated by the animals who chew through it again and finish the digestive process.
- However, as grass and other vegetation ferments in the rumen, it generates methane, a potent greenhouse gas.
- The entire process can be seen in following diagram.

How are rice fields responsible for methane emission?

- As in a natural wetland, flooding a rice field cuts off the oxygen supply from the atmosphere to the soil, which results in anaerobic fermentation of soil organic matter. Methane is a major end product of anaerobic fermentation.
- Methane is exclusively produced by methanogenic bacteria that can metabolise only in the strict absence of free oxygen. And such waterlogged paddy field help to provide suitable condition.
- The entire process can be seen in the following diagram.



Other sources of methane emission

Natural sources

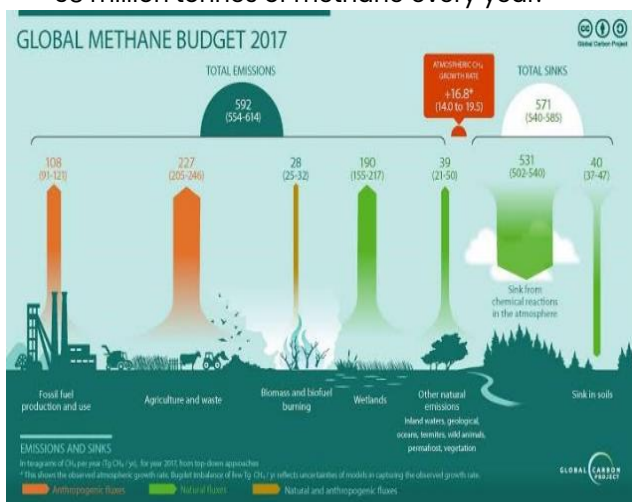
- Termites, oceans, sediments, volcanoes, and wildfires are examples of smaller sources.
- Termites for digestion produce around 23 million tonnes of methane per year.
- Volcanoes also produce methane when they erupt.
- Microbes in the ocean that produce methane contribute significantly to methane emissions.

Oceans emit 19 million tonnes of methane each year on a global level.

- Methane hydrate deposits found along continental margins below Antarctic ice are also a natural source of methane.

Anthropogenic Sources

- CH₄ is also produced when animal manure is stored or managed in lagoons or holding tanks.
- Natural gas is primarily composed of methane. Methane is released into the atmosphere during natural gas production, processing, storage, transmission, and distribution, as well as crude oil production, refinement, transportation, and storage.
- Coal mining also contributes to CH₄ emissions.
- Methane is produced in landfills as waste decomposes and in wastewater treatment.
- Biomass burning - According to reports, it emits 38 million tonnes of methane every year.



Global Initiatives to Reduce Methane Emissions

- **COP 26 Pledges:** Over 100 countries excluding India, Russia and China signed an agreement at COP26 in Glasgow to reduce methane emissions by 30% by 2030, as methane may be easier to deal with than carbon dioxide.
- **MethaneSAT 2022:** MethaneSAT (Earth Observation Satellite) is a proposed American-New Zealand space mission to monitor and research worldwide methane emissions in order to mitigate climate change.
- **UN Initiatives:** The UN's Koronivia Joint Work on Agriculture initiative is assisting in the transformation of farming and food production, with an emphasis on how to preserve productivity in the context of climate change.

Initiatives Taken by India to Reduce Methane Emissions

- **Harit Dhara initiative:** The Indian Council of Agricultural Research (ICAR) developed an anti-methanogenic feed supplement which reduces methane emissions caused by livestock by 17-20%.
- The **Ministry of New and Renewable Energy (MNRE)** is committed to investing in a national strategy to promote biogas production in order to minimise methane emissions caused by anthropogenic activities.
- In partnership with the country's three premier institutes, the **Central Salt & Marine Chemical Research Institute (CSMCRI)** developed a seaweed-based animal feed additive formulation that aims to minimise methane emissions from cattle while simultaneously boosting immunity in cattle and poultry.
- **National Action Plan on Climate Change (NAPCC):** It was established in June 2008 with the purpose of formulating a comprehensive policy to tackle climate change and to reduce greenhouse gases.
- **National Mission for Enhanced Energy Efficiency (NMEEE):** It was established in 2011 with the purpose of developing the energy efficiency industry through the implementation of appropriate laws and regulations.

MCQs

Question: Among the following crops, which one is the most important anthropogenic source of both methane and nitrous-oxide? (**UPSC CSE 2022**)

- Cotton
- Rice
- Sugarcane
- Wheat

Answer: (b)

Six Of 9 Planetary Boundaries Have Been Breached Because Of Human Activities: Study

Priority: Medium

Primary Source: Down To Earth

Relevance: Conservation, environmental pollution and degradation, environmental impact assessment, Disaster and disaster management.

Prepp Prelims Booster: Planetary Boundaries Framework

Prepp Mains Booster: Issues Related To Environment Degradation

Context

- In a startling revelation, the Advances journal reported that **six out of the nine planetary boundaries vital for preserving Earth's stability**

and resilience have been breached due to human activities.

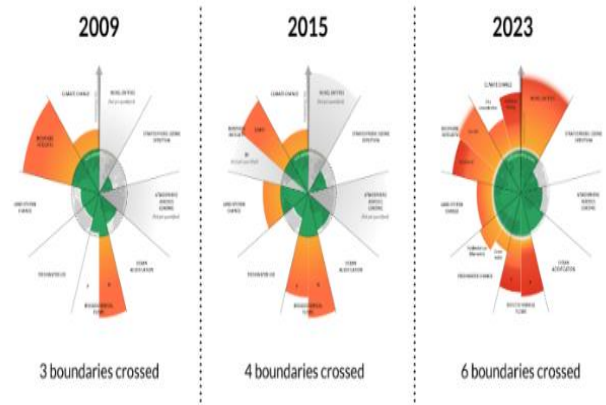
- These findings sound an alarm about the precarious state of our planet and emphasize the urgency of taking swift, coordinated action.

What are Planetary Boundaries?

- The planetary boundaries framework, introduced in 2009, delineates the environmental limits within which humanity must operate to ensure the planet's safety.
- Breaching these boundaries threatens the earth's overall stability and resilience.

The Six Breached Planetary Boundaries

- **Climate Change:** The current atmospheric **carbon dioxide concentration and radiative forcing values (417 ppm & 2.91 Wm⁻²) have surpassed the set boundaries of 350 ppm and 1 Wm⁻².**
- **Land System Change:** The global forested land area has dwindled to **60% of its original cover, breaching the safe limit set at 75%.**
- **Biosphere Integrity:** This boundary encompasses genetic diversity and energy available to ecosystems. However, the **rate of species extinctions and the decline in net primary production (energy available to ecosystems) have pushed the boundary beyond limits.**
- **Freshwater Change:** Both **blue water (surface and groundwater) and green water (water available for plants) have been impacted.** Human interference has exceeded the boundaries, leading to freshwater changes since 1905 and 1929.
- **Biogeochemical Flows: Nutrient flows, specifically Phosphorus and Nitrogen, have surged beyond their set boundaries.** This has adverse effects on biodiversity, water quality, and climate change. Reactive nitrogen, part of this category, contributes to climate change through the production of potent greenhouse gases.
- **Novel Entities:** The **introduction of microplastics, endocrine disruptors, and organic pollutants into the environment has breached the boundary for novel entities.** (The chemical pollution boundary has been expanded and renamed "novel entities" created entirely by us humans. They include emissions of toxic compounds such as synthetic organic pollutants and radioactive materials, but also genetically modified organisms, nanomaterials, and microplastics.)



Other Planetary Boundaries

- The remaining three planetary boundaries – **ocean acidification, atmospheric aerosol loading, and stratospheric ozone depletion – have not been breached but pose increasing risks of exceeding their limits, indicating the need for vigilance.**
- Stratospheric ozone depletion, initially transgressed in the 1990s, has since returned within safe operating limits thanks to global pacts like the Montreal Protocol.

Research Process and Findings

- This is the third iteration of the Planetary boundaries framework, involving scientists from 29 countries who employed computer simulations.
- They first identified processes essential for maintaining favorable conditions for humans over the last 12,000 years.
- These stable and warm planetary conditions guided their assessment of how human activities increase the risk of irreversible environmental changes.
- The findings indicate that the **earth's safe climate and land system breached in 1988, heightening the risk of systemic disruption.**
 - These breaches are a wake-up call, demanding immediate attention and action.

Recommendations for a Sustainable Future

- The researchers emphasize the significance of global cooperation, citing the progress made in protecting the ozone layer through international collaboration.
- They call for a common framework to achieve targets in other areas, highlighting the importance of international environmental protection.
- **A circular economy, mirroring the cyclical processes found in nature, is recommended to minimize waste and resource consumption.**

- **Additionally, sustainable waste management practices are essential to curb threats to the air, land, and water.**

Conclusion

- The breach of planetary boundaries poses a significant threat to Earth's stability and resilience.
- To safeguard our environment, the planetary boundaries framework should be continuously updated to align with changing climate goals and the evolving environment.
- Achieving a sustainable and circular economy through global cooperation is vital to preserving the planet for future generations.
- These findings underscore the urgent need for collective action to avert a global environmental crisis.

UPSC Mains Previous Year Question

Q.1) Define the concept of carrying capacity of an ecosystem as relevant to an environment. Explain how understanding this concept is vital while planning for the sustainable development of a region. **(UPSC GS3 2019)**

Q.2) Describe the major outcomes of the 26th session of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). What are the commitments made by India in this conference? **(UPSC GS3 2021)**

Q.3) Discuss global warming and mention its effects on the global climate. Explain the control measures to bring down the level of greenhouse gases which cause global warming, in the light of the Kyoto Protocol, 1997. **(UPSC GS3 2022)**

MCQs

Question: Which one of the following statements best describes the term 'Social Cost of Carbon'? It is a measure, in monetary value, of the **(UPSC CSE 2020)**

- long-term damage done by a tonne of CO₂ emissions in a given year
- requirement of fossil fuels for a country to provide goods and services to its citizens, based on the burning of those fuels
- efforts put in by a climate refugee to adapt to live in a new place
- contribution of an individual person to the carbon footprint on the planet Earth

Answer: (a)

Agriculture (GS Paper Prelims) & GS Paper III
(Main)

Climate Change Has Transformed Pearl Millet Cultivation Zones In India #Climate_Change_Impact_On_Agriculture

Priority: Medium 

Primary Source: Down To Earth

Relevance: Major crops–cropping patterns in various parts of the country, cropping Patterns, Agroclimatic Regions

Prepp Prelims Booster: Climate change, Millets Crop, Agro Climatic Conditions

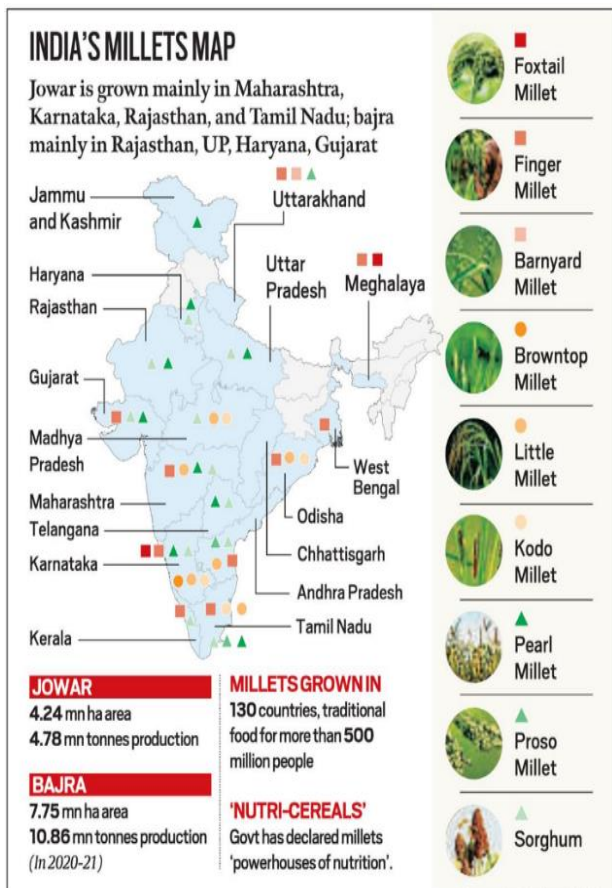
Prepp Mains Booster: Change in Millet crop Cultivation Zones

Context

- A recent study conducted by the **International Crops Research Institute for the Semi-arid Tropics (ICRISAT) and the Indian Council of Agricultural Research – All India Coordinated Research Project on Pearl Millet (ICAR–AICRP)** has unveiled significant shifts in India's pearl millet (bajra) production zones.

Key Findings of the Study:

Key Points	Details
Shifted Production Zone	The core production zone shifted from arid regions in Rajasthan to eastern Rajasthan and Haryana.
	Increased rainfall in Gujarat is prompting farmers to shift from pearl millet to cash crops like cotton and castor beans.
Triggering Factor	Increased rainfall due to human-induced climate change.
Zone Classification	India classifies pearl millet cultivation zones based on rainfall patterns and soil types.
	Zone 'A1': The arid regions of Rajasthan, which receive less than 400 millimetres (mm) of rainfall, are categorised as Zone 'A1'.
	Zone 'A': Semi-arid regions in north and central India, including southern Rajasthan, Haryana, Gujarat and Uttar Pradesh, which receive more than 400 mm of rainfall per year, form Zone 'A'.
	Zone 'B': Semi-arid regions with heavy soils in southern India and central western India with over 400 mm of rainfall from Zone B.



What is Millet?

- Millet is a collective term referring to a group of small-seeded annual grasses cultivated as grain crops.
- These grains are primarily grown on marginal lands in dry areas across temperate, subtropical, and tropical regions.
- In India, **common millet varieties include Ragi (Finger millet), Jowar (Sorghum), Sama (Little millet), Bajra (Pearl millet), and Variga (Proso millet).**

What climate does millet grow in?

Millet is typically grown in areas **with hot and dry climates**, although they can also be grown in areas with moderate rainfall. Millets require **temperatures between 25–35°C** and can **tolerate drought conditions**. **Soil:** Millets prefer **well-drained soils with good organic matter content**.

Significance of Millets:

- Millet is **highly valued for its nutritional content**, providing essential nutrients like protein, fiber, and various micronutrients.
- Additionally, millets play a pivotal role in food security, helping to **prevent non-communicable lifestyle diseases such as diabetes, hypertension, and cardiovascular disease**.

- These grains are recognized as a potential solution for combating malnutrition and **enhancing food and nutrition security, particularly in regions with unpredictable weather patterns** and water scarcity, as millets are drought-resistant and require minimal inputs.
- Furthermore, their adaptability to various environmental conditions and low input requirements **make them a resilient crop choice**, particularly for smallholder farmers.

Concerns Regarding Millet Production and Consumption:

- Inadequate consumer awareness about millets and how to incorporate them into diets.
- Changing consumer preferences favoring processed and refined foods over traditional millet products.
- A lack of processing and storage infrastructure for millets.
- Limited market access, particularly in remote and rural areas.
- Low productivity due to insufficient access to quality seeds, fertilizers, and other agricultural inputs.
- The adverse effects of climate change on millet production, especially in regions already prone to drought and extreme weather conditions.

Initiatives for Millets Production in India:

- The National Millets Mission (NMM), launched in 2021, to boost millet production and consumption.**
- The Price Support Scheme (PSS) to provide financial support to millet farmers.**
- Encouragement of value-added millet products.**
- Integration of millets into the Public Distribution System (PDS).**
- Promotion of organic farming of millets.**

UPSC Previous Year Mains Question

Q.1) How has the emphasis on certain crops brought about changes in cropping patterns in the recent past? Elaborate the emphasis on millets production and consumption. **(UPSC GS3 2018)**

Question: Among the following, which one is the least water-efficient crop? **(UPSC CSE 2021)**

- Sugarcane
- Sunflower
- Pearl Millet
- Red gram

Answer: (a)**Disaster Management (GS Paper Prelims) & GS Paper III (Main)**

Eight Institutes Give An Array Of Reasons For Joshimath Sinking #Disaster_Management

Priority: High**Primary Source:** The Hindu**Relevance:** Disaster and disaster management.**Prepp Prelims Booster:** Chief Election Commissioner and other Election Commissioners (Appointment, Conditions of Service and Term of Office) Bill, 2023**Prepp Mains Booster:** Issues Related To Land Subsidence At Joshimath**Context**

- Recently, separate studies conducted by eight premier Institutes of India identified various reasons for the land subsidence in Joshimath, Uttarakhand.
- According to the report, seismic activities, construction loopholes, population pressure, and poor drainage systems are among the most 'likely' reasons for the sinking of the Himalayan town.

Which are the Eight Institutes that have prepared reports on the land subsidence at Joshimath?

- The government had mandated the following institutions to identify the causes of the land subsidence at Joshimath.
 - Wadia Institute of Himalayan Geology (WIHG)
 - National Geophysical Research Institute (NGRI)
 - National Institute of Hydrology (NIH)
 - Indian Institute Of Technology (IIT-Roorkee)
 - Indian Institute of Remote Sensing (IIRS)
 - Geological Survey of India (GSI)
 - Central Ground Water Board (CGWB)
 - Central Building Research Institute (CBRI)

What have the reports stated?**WIHG**

- Earthquakes in the area are a major reason for the slow and gradual land subsidence.
- It highlighted the need for LiDar sensors to provide bare-ground topography and surface models as it will make planning of management and mitigation convenient.

NGRI

- Certain areas of the town have sunk vertically by over 3 feet and have been displaced by over 1.4 feet.
- Steep air-filled fissures in excess of 100 feet were found in areas with loose soil cover and the absence of sub-surface rocks.

- Land cover analysis of satellite data revealed that there was a 100% increase in built-up area in the region between 2010 and 2020.

NIH

- The report stated that land subsidence and subsurface water might be connected based on evidence from maps of springs, drainage networks, and subsidence areas of the Joshimath region.
- It gave a clean chit to the NTPC as samples of water taken from the NTPC sites differed in terms of isotopic and water quality signatures from the samples taken from the JP site and drains and springs in Joshimath.
- Bacteriological analysis showed that the gush water was fresh and not contaminated by the local drain.
- It recommended the safe disposal of water from higher up and prioritizing the town's waste disposal.

IIT Roorkee

- The soil fabric of Joshimath is a complex mixture of boulders, gravel, and soil.
- Internal erosion caused by rainwater infiltration and wastewater discharge affects the stability and results in the readjustment of the boulders, and subsequently subsidence.
- It recommended controlling water infiltration to minimize internal erosion.

IIRS

- ISRO utilized the Small Baseline Subset (SBAS) Interferometry SAR technique to analyze the subsidence in Joshimath.
- Subsidence leading to ground and structural was attributed to phenomena like
 - toe-cutting
 - slope instability due to drainage water seepage
 - terrain characteristics
 - loose moraine materials
 - recent flash flood events.

GSI

- The Geological Survey of India (GSI) recommended ground-based terrestrial monitoring in different parts of Joshimath.

CGWB

- It stated that Joshimath's location and geographic factors contributed to the crisis.
- It recommended an immediate halt to construction activities in the spring zone area and the clearing of any concrete material covering the emergence of springs.

CBRI

- Construction in Joshimath town is not compliant with the provisions of the National Building Code of India, 2016.
- The town has masonry (44%), RCC (42%), and other construction typologies (14%) of which 99% are non-engineered.
- The town is located on the Vaikrita group of rocks overlain by moraine deposits of irregular boulders and clays of varying thicknesses, which are less cohesive and thus more susceptible to slow subsidence and landslide subsidence.
- There has been a history of creeping and occasional subsidence in the region.
- The CBRI suggested that there is a need to review the principles of town planning in mountainous regions focusing on good construction practices, materials, regulatory mechanisms, and awareness among stakeholders based on geo-technical and geo-climatic conditions.

What have environmental activists claimed?

- **Infrastructure projects:** Concerns have been raised about the infrastructural development in the area such as the NTPC project and the Chardham road widening.
- **Poor implementation:** Questions were also asked about the lack of implementation of recommendations made after previous disasters and the absence of any regulations on tourism in the region.
- **Repeated suggestions:** Some environmental experts suggested that the findings were similar to previous committee reports.

Other reports

- In 2022, the Uttarakhand government's expert panel found that several areas of Joshimath are sinking and that the removal or displacement of subsurface materials has induced structural defects and damage.
- In 1976, the report prepared by the Mishra Committee identified that Joshimath lies on a deposit of sand and stone and not on the main rock.
- The river currents of Alaknanda and Dhauliganga are also a factor behind the landslides.
- Sinking could have been triggered by the reactivation of a geographic fault where the Indian Plate has pushed under the Eurasian Plate.
- It recommended restrictions on heavy construction work, blasting, and digging to remove boulders, tree felling, etc.



Joshimath

- Joshimath is a hilly town in the Chamoli district of Uttarakhand.
- Chamoli district experienced frequent landslides and flooding in 2021, with reports of cracks on walls and buildings.
- It is situated in a geologically unstable region (Seismic Zone V) and north of the Main Central Thrust (of the Himalayas) near the Tapovan Fault.

Cultural significance

- Joshimath is also known as the "winter seat" of Lord Badrinath as the idol of the Badrinath temple is brought down to the Vasudeva temple in Joshimath annually.
- The town acts as the gateway to the Sikh holy shrine Hemkund Sahib.
- It is home to one of the four cardinal maths or monasteries established by Adi Shankara besides Sringeri (Karnataka), Dwarka (Gujarat), and Puri (Odisha).

Way Forward

- The development strategy for the Himalayas should be based on the region's natural resources such as biodiversity, ecotourism, etc., and account for the ecological risks faced by the region.
- There should be a focus on small projects that would provide energy supply to the locals instead of large hydroelectric projects.
- Traditional knowledge, agricultural practices, construction practices, and local culture should be used to develop policies for the region.
- The Government should actively implement the suggestions made by the committee reports unlike earlier.
- Agriculture must be encouraged in the Himalayan region of Uttarakhand as fallow land has increased in the state.

UPSC Mains Practice Questions

- Q.1)** Bring out the causes for more frequent landslides in the Himalayas than in the Western Ghats. **(UPSC GSI 2013)**
- Q.2)** Describe the various causes and the effects of landslides. Mention the important components of the National Landslide Risk Management Strategy. **(UPSC GS3 2021)**
- Q.3)** How can the mountain ecosystem be restored from the negative impact of development initiatives and tourism? **(UPSC GSI 2019)**
- Q.4)** "The Himalayas are highly prone to landslides." Discuss the causes and suggest suitable measures of mitigation. **(UPSC GSI 2016)**

MCQs

Question: When you travel in the Himalayas, you will see the following? **(UPSC CSE 2012)**

1. Deep gorges
2. U-turn river courses
3. Parallel mountain ranges
4. Steep gradients causing land-sliding

Which of the above can be said to be the evidence for the Himalayas being young fold mountains?

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

Answer: (d)

Science and Technology (GS Paper Prelims) & GS Paper III (Main)

The Need For An Indian System To Regulate AI #Artificial_Intelligence

Priority: High



Primary Source: The Hindu

Relevance: Science and Technology- developments and their applications and effects in everyday life, Government policies and interventions for development in various sectors and issues arising out of their design and implementation

Prepp Prelims Booster: Artificial Intelligence

Prepp Mains Booster: Issues Related To the Regulation of Artificial Intelligence

Why in the news?

- Recently, AI regulation has become a necessity due to its capacity to gather data from multiple sources and generate unique solutions.
- However, differences exist between AI regulatory systems in Eastern and Western countries, reflecting varying approaches and philosophies.

- This article discusses these distinctions and explores the reasons behind the growing need for AI regulation.



Why AI Regulation is Crucial

- **Lack of Transparency:** Many AI algorithms function as **black boxes**, lacking transparency in their decision-making processes.
 - This opacity raises concerns about accountability and the potential for biased outcomes.
- **Bias and Discrimination:** AI systems can inherit biases from their training data, leading to discriminatory results.
 - Notably, facial recognition technology has shown higher error rates for people of color.
- **Lack of Accountability:** Complex AI systems pose challenges in determining responsibility and accountability, complicating liability issues.
- **Privacy and Data Protection:** AI relies on vast amounts of personal data, raising concerns about **privacy, data breaches, and misuse**.
- **Lack of Regulation and Standards:** The rapid development of AI has outpaced regulatory frameworks and industry standards, resulting in a regulatory gap.
- **Security Risks:** AI systems are vulnerable to cyber threats that can manipulate results, particularly concerning fields like autonomous vehicles and healthcare.
- **Ethical Considerations:** AI's impact on **jobs, social inequality**, and the **concentration of power** raises ethical concerns.

East vs. West: Different Approaches

- While the EU, Brazil, Canada, Japan, and China have made substantial progress in AI regulation, they adopt diverse approaches.

Western Model: Risk-Based Regulation

- Western systems like the EU, Brazil, and Canada adopt a **risk-based approach**, categorizing AI applications into levels of risk: **unacceptable, high, limited, and low risk**. This approach emphasizes rules and compliance.

Japanese Approach: Human-Human-Centric AI

- Japan's **Integrated Innovation Strategy Promotion Council outlines seven social principles for AI interactions, focusing on human-centricity, data protection, safety, fair competition, fairness, accountability, and innovation.**
- Japan's model combines **legal and moral jurisprudence**, emphasizing the underlying morality of law.

Chinese Perspective: Values-Driven Regulation

- **Chinese regulations prioritize adherence to laws, ethics, and social morality** in AI services.
- Unlike the Western model, China's approach centers on the values that should guide compliance.

Hindu Jurisprudence and Eastern Legal Systems

- Eastern legal systems, often referred to as "**Hindu Jurisprudence**," **prioritize achieving specific ends with underlying moral codes.**
- These systems rely on intuition, allowing individuals to find ways to implement the law adequately.

The Underlying Theories

- **Western legal systems postulate rules of law**, prescribing exact actions and penalties for non-compliance.
- In contrast, **Eastern systems rely on intuition** to achieve goals, based on underlying moral principles.
- This approach has been successful historically, as seen in India's Pandava's exile and Ashoka's edicts, as well as China's Emperor Wudi.

Initiatives in India and Rest of the World

- **India:** India is developing comprehensive frameworks for AI regulation under the **Digital India framework**, including **cyber laws** and a **National Data Governance Framework Policy**.
- A **new Digital India Act** will have a specific chapter on emerging technologies like AI.
- **Rest of the World:** The EU is drafting the **Artificial Intelligence Act**, the US has published principles to minimize AI harm, Japan follows the **Society 5.0 project**, and China has introduced various AI-related laws and ethical guidelines

Cue from the Judiciary

- India should draw inspiration from its own legal heritage and not merely replicate Western models.
- Indian regulators should consider recommendations from judges who have advocated for AI regulation based on Eastern jurisprudence models.

Conclusion

Effective AI regulation in India must align with the country's ethos, taking inspiration from Eastern models that emphasize moral principles and end goals. By doing so, India can develop regulations that are not only effective but also culturally congruent.

To learn more about AI, click the [link](#).

MCQs

Question: With the present state of development, Artificial Intelligence can effectively do which of the following? (UPSC CSE 2020)

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

Select the correct answer using the code given below:

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

Answer: (d)

Somatic Genetic Variants: A Genomic Revolution Hiding Inside Our Cells #Genetic_Engineering

Priority: High 

Primary Source: The Hindu

Relevance: Science and Technology- developments and their applications and effects in everyday life; Issues relating to development and management of Social Sector/Services relating to Health

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Issues Related to Health and Genetics

Context:

- **Somatic mutations**, despite being a fundamental aspect of human biology, often go unnoticed in our daily lives.
- These mutations play a crucial role in the field of biotechnology, impacting genetic diversity and contributing to various physiological processes in the human body.
- This article discusses somatic mutations, exploring their significance and applications.

Inheriting Traits: The Blueprint of Our Genome

- The **human genome consists of 23 pairs of chromosomes**, with each pair inherited from our parents.
- This genetic blueprint is passed down through sperm and ovum, shaping the unique genetic structure of each individual.

- After fertilization, the single cell formed begins to replicate its genetic material, ultimately giving rise to nearly a trillion cells.
- Remarkably, the DNA replication process is exceptionally accurate, thanks to the action of proteins that proofread and correct errors.

'Copy-Paste' Mistakes: Unveiling Mutation Rates

- Although DNA replication is highly precise, studies have revealed a small error rate, estimated at 0.64–0.78 mutations per billion base pairs per cell division.
- This error rate may seem minuscule, considering the vastness of the human genome.
- However, the impact of these errors can vary depending on the stage of development or the point in the life cycle.

Somatic Genetic Mutations

- **Somatic genetic mutations refer to mutations that occur after birth, specifically during the developmental phase.**
- These mutations are acquired after conception and are **not passed on to future generations.**
- Somatic mutations are **influenced by the continuous copy-pasting of the genome, leading to a higher rate of occurrence with age and increased tissue turnover.**
- Somatic mutations are sometimes referred to as **driver mutations** because they can confer a competitive advantage to a cell.
- They are distinct from **germline mutations, which are inherited from parents** and present in every cell of an individual's body.
- **Somatic mutations can result from various factors, including exposure to environmental mutagens like radiation or chemicals, errors in DNA replication, and other cellular processes.**
- These mutations can affect the DNA sequence of specific genes, leading to changes in protein production or function.

The Mosaic of Cells:

- Rather than being clones of a single cell, the human body can be viewed as a **mosaic of cells** with subtle genetic differences.
- Some of these genetic variants may be responsible for encoding or regulating proteins, while others may not serve a specific function.

Applications:

- Somatic genetic variations play a pivotal role in several physiological processes.
- For instance, **antibody-producing immune cells undergo somatic changes to produce a diverse range of proteins that can recognize and bind to specific pathogens.**

- This diversity creates a library of cells, each equipped with a unique protein.
- When the body encounters an infection, it selects cells with proteins that bind effectively to the pathogen, allowing for the production of antibodies.
- **Cancer's Signatures: Certain somatic changes can lead to the development of cancer.**
- Understanding these changes can aid in the early detection, diagnosis, and prognosis of cancer.
- Mutational signatures, or specific genetic variations and patterns, are characteristic of different cancers.
- This knowledge is crucial for early detection and monitoring the progress of the disease.
- **Development of Genetic Diseases:** Somatic genetic variants can lead to various genetic diseases.
 - While these diseases are not genetically inherited, they result from genetic variations that occur during development.
 - The severity and distribution of the disease depend on when the corresponding mutation takes place.
- **Beneficial Impact:** Somatic changes can occasionally revert a harmful mutation to a normal one through the phenomenon of **revertant mosaicism.**
 - For example, around 10% of **Wiskott-Aldrich syndrome** cases have been found to exhibit revertant mosaicism, alleviating the severity of the disease in many cases.

The SMaHT Network: A Data-Centric Approach

- The U.S. National Institutes of Health has launched the **'Somatic Mosaicism across Human Tissues' (SMaHT) Network.**
- This initiative aims to understand somatic mosaicism and its biological and clinical significance.
- By characterizing somatic variants in multiple tissues from post-mortem samples, the SMaHT Network seeks to develop tools, resources, and analytical capabilities for studying these mutations.

Conclusion

- Innovative approaches to studying somatic mutations at the single-cell level promise to revolutionize our understanding of evolution and how diseases affect humans.

- These developments provide exciting opportunities for biotechnology and medical research, ultimately contributing to a deeper knowledge of the intricate genetic processes that shape our lives.

UPSC Mains Practice Questions

Q.1) Why is there so much activity in the field of biotechnology in our country? How has this activity benefitted the field of biopharma? (UPSC GS3 2018)

Q.2) What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of the society? (UPSC GS3 2021)

MCQs

Question: At present, scientists can determine the arrangement or relative positions of genes or DNA sequences on a chromosome. How does this knowledge benefit us?

1. It is possible to know the pedigree of livestock
2. It is possible to understand the causes of all human diseases.
3. It is possible to develop disease resistant animal breeds.

Which of the statement(s) given above is/are correct? (UPSC CSE 2011)

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

Answer: (d)

Aditya L1 Heads Towards Lagrange Point

#Space_Science

Priority: Medium



Primary Source: The Hindu

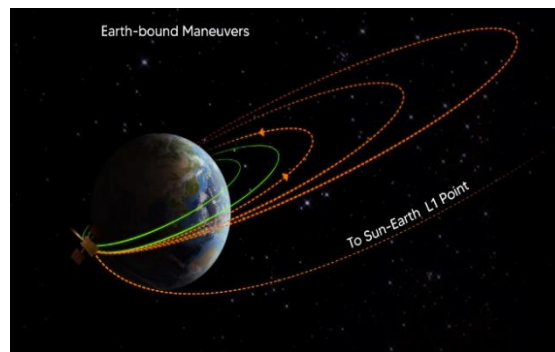
Relevance: Awareness in the fields of IT & Space

Prepp Prelims Booster: Aditya L-1

Prepp Mains Booster: Issues Related to Solar Missions

Context

- Recently, **Aditya L1**, India's pioneering space mission dedicated to studying the Sun, has successfully completed its second earth-bound manoeuvre, marking a crucial step in the mission's progress.
- The manoeuvre, known as the "**second Earth-bound manoeuvre**," was executed by **ISRO's Telemetry, Tracking, and Command Network (ISTRAC)** located in Bengaluru.



About the Mission

- Aditya-L1, India's space observatory, is specifically designed for solar studies. It orbits the Sun-Earth **Lagrangian point L1**, situated about 1.5 million kilometers from Earth.
- Launched on September 2, 2023, via **ISRO's Polar Satellite Launch Vehicle (PSLV-C57)** from Sriharikota's Satish Dhawan Space Centre (SDSC), Aditya-L1 marks a significant achievement in India's space exploration efforts.
- Its journey began successfully with the first Earth-bound maneuver, and two more such maneuvers are planned before it reaches its final destination, L1, in approximately 127 days.

Objective:

- **The primary objective of the Aditya L1 mission is to study the Sun's upper atmospheric layers, specifically the chromosphere and corona.**
- The mission will also examine **coronal mass ejections (CMEs), large expulsions of plasma and magnetic fields from the Sun's corona, and analyse the corona's magnetic field, the driver of space weather**

Payloads:

Ex-situ

- **Visible Emission Line Coronagraph (VELC):**
 - Study the solar corona.
 - Observe the dynamics of Coronal Mass Ejections.
- **Solar Ultraviolet Imaging Telescope (SUIT):**
 - Capture images of the Solar Photosphere and Chromosphere in near UV.
 - Measure solar irradiance variations in near UV.
- **Solar Low Energy X-ray Spectrometer (SoLEXS):**
 - Function as a Soft X-ray spectrometer.
 - Study X-ray flares from the Sun across a wide X-ray energy range.
- **High Energy L1 Orbiting x-ray Spectrometer (HELIOS):**
 - Acts as a Hard X-ray spectrometer.
 - Investigates X-ray flares from the Sun across a wide X-ray energy range.

In-Situ

- **Aditya Solar wind Particle Experiment (ASPEX):**

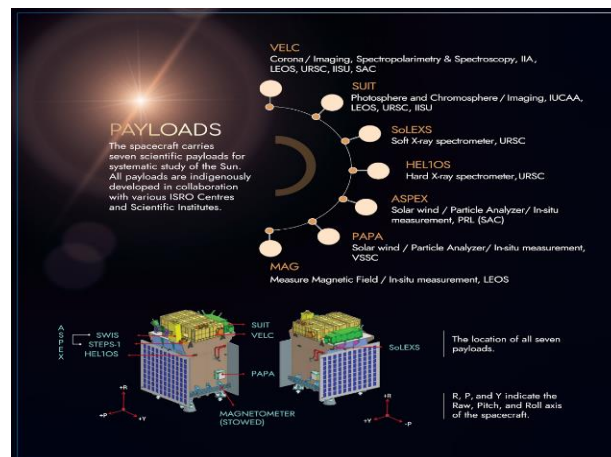
- Studies solar wind and energetic ions.
- Analyze their energy distribution.
- **Plasma Analyser Package for Aditya (PAPA):**
- Collects data on plasma characteristics and composition in the interplanetary space.
- To provide insights into solar wind interactions with the environment.
- **Advanced Tri-axial High-Resolution Digital Magnetometers:**
- Measure the low-intensity interplanetary magnetic field in space.
- It has two sets of Magnetic Sensors- one at the tip of a 6-meter deployable boom and the other in the middle of the boom, 3 meters away from the spacecraft.

What does Aditya L1's orbit raising maneuver mean?

- Aditya-L1's orbit-raising maneuver is a crucial step in its mission to study the Sun.
- **It involves using propulsion systems to increase the satellite's orbit gradually.** This process includes firing rockets and adjusting angles. **(Earth-bound manoeuvres involve the firing of rockets and some adjustments to angles, as required.** Example of when a person is on a swing – to make the swing go higher, a pressure (by shifting body weight) is applied in the phase when the swing is coming down towards the ground)
- Once Aditya-L1 gains enough velocity, it will follow its intended path towards the L1 point near the Sun.

What will be Journey of Aditya L1?

- **The satellite will remain in Earth orbit for 16 days, during which five orbit-raising maneuvers will be conducted** to achieve the required velocity.
- After these maneuvers, Aditya-L1 will start its 110-day journey to the L1 point near the Sun.
- To reach the L1 point, Aditya-L1 will undergo a **trans-Lagrangian1 insertion maneuver, which will inject it into a stable halo orbit around Lagrangian Point 1.**
- **This point is where the gravitational forces of the Earth and Sun balance each other, providing stability to the satellite.**
- Aditya-L1 will be positioned 1.5 million km away from Earth, directed toward the Sun, allowing it to study the Sun's outer atmosphere.
- This mission is expected to take approximately four months to cover the distance.



What is L1?

- Lagrange points provide spacecraft with a valuable advantage, enabling them to conserve fuel while staying in a stable position where the gravitational forces of the Sun and Earth are precisely balanced by the necessary centripetal force.
- The Lagrange point **L1 resides roughly 1.5 million km from Earth and enables continuous solar observation through unobstructed halo orbit movement.**
- **There are five Lagrangian points between Earth and the Sun, where objects can maintain stable positions with minimal fuel consumption.**
- Aditya L1's mission aims to capitalize on this unique vantage point, offering unprecedented insights into the Sun and its activities.

Lagrange Points in the Sun-Earth System

- **L1:** Ideal for solar observations; offers continuous Sun viewing. It is currently home to the **Solar and Heliospheric Observatory Satellite (SOHO).**
- **L2:** It is positioned directly 'behind' Earth as viewed from the Sun and is **excellent for observing the larger Universe without Earth's shadow interference.** The **James Webb Space Telescope** orbits the Sun near L2.
- **L3:** It is positioned opposite Earth behind the Sun; potential for **observing the far side of the Sun.**
- **L4 and L5:** Stable positions forming an equilateral triangle with Earth and Sun. Used for space observatories, especially for asteroid studies.

Advantages of placing a satellite at L1

- It can **continuously monitor the Sun** without its view being blocked, which allows it to track solar storms heading toward Earth.
- **Satellites at L1 can be positioned to always look directly at the Sun** unlike those placed in elliptical heliocentric orbits (NASA's Parker Solar Probe).

- **As gravitational forces are balanced at L1 relatively little fuel is required** for the satellite to maintain its position.
- As the **L1 provides an early vantage point to observe coronal mass ejections and solar flares before they affect Earth, the lead time for space weather predictions increases.**

What is the significance of the Aditya-L1 Mission?

- As our closest star, the Sun offers unparalleled opportunities for detailed study, which in turn can enhance our understanding of other stars.
- Aditya L-1 is India's own solar-based observatory which will boost understanding of the Sun's influence on the solar system, planets, and beyond by expanding ISRO's scientific capabilities beyond Earth's orbit.
- **ISRO capabilities: Aditya-L1 signifies India's first-ever solar mission** positioning ISRO as a leading space agency that is capable of undertaking complex deep space travel and advanced space science alongside **NASA, ESA, and CNSA.**
- Aditya-L1 lays the foundation for India to become a global hub for solar system science which will include studying the solar poles.
- **Warnings:** Despite supporting life on Earth, the Sun exhibits explosive events that pose risks to satellites and communication systems.
- Solar exploration missions will help issue advance warnings for such incidents.
- **Prediction capabilities:** It will significantly **advance our space weather prediction capabilities and improve forecasts of geomagnetic storms.**
- Real-time monitoring of the Sun and observations of the corona and solar storms will boost space weather prediction capabilities and help secure satellite systems and power grids on Earth.
- **Solar studies:** The Sun's extreme thermal and magnetic phenomena act as a natural laboratory for research, which isn't feasible within controlled lab environments.
- Studying the Sun from Earth alone is limited, necessitating space exploration for a comprehensive understanding.
- Space-based observations are crucial as Earth's protective atmosphere and magnetic field block harmful radiations like UV light.
- **Future missions: ISRO aims to launch Aditya-L2 and Aditya-L3 missions in highly elliptical orbits to further study the Sun.**

- **Aditya-L2 satellite which will be placed at the L2 point is expected to be able to provide the first-ever direct imaging of the Sun's far side.**

How is the Aditya-L1 Mission unique?

- **First time spatially resolved solar disk in the near UV band**
- **CME dynamics close to the solar disk, thereby providing information on the acceleration regime** of the CME, which is not observed consistently.
- **On-board intelligence to detect CMEs and solar flares** for optimized observations and data volume
- **Directional and energy anisotropy of solar wind** using multi-data observations

UPSC Previous Year Mains Question:

Q.1) Discuss India's achievements in the field of Space Science and Technology. How has the application of this technology helped India in its socio-economic development? **(UPSC GS3 2016)**

MCQs

Question: With reference to 'Astrosat', the astronomical observatory launched by India, which of the following statement(s) is/are correct? **(UPSC CSE 2016)**

1. Other than USA and Russia, India is the only country to have launched a similar observatory into space.
 2. Astrosat is a 2000 kg satellite placed in an orbit at 1650 km above the surface of the Earth.
- Select the correct answer using the codes given below.
- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (d)

Question: NASA's Deep Impact space mission was employed to take detailed pictures of which comet nucleus? **(UPSC 2007)**

- (a) Halley's Comet
(b) Hale-Bopp
(c) Hyakutake
(d) Tempel 1

Answer: (d)

Indian Society (GS Paper Prelims) & GS
Paper I (Main)

More Women Odhuvars In T.N Temples #Gender_Inequality

Priority: High



Primary Source: The Hindu

Relevance: Salient features of Indian Society, Diversity of India; Role of women

Prepp Prelims Booster: What are Women Odhuvars

Prepp Mains Booster: Significance of Women Redefining Roles as Odhuvars in Temples, Abolition of Untouchability, Gender Equality and Inclusivity

Context

- Recently, **Tamil Nadu's Hindu Religious & Charitable Endowments Department (HR & CE)** has recently appointed 15 **Odhuvars**, including five women, to temples in the Chennai region.
- These individuals, both men and women, have diverse backgrounds but share a common goal of serving deities through their singing.
- This move represents a positive shift towards gender equality and inclusivity in religious practices and temple activities, as traditionally, the role of Odhuvars had been dominated by men.



Who are Odhuvars?

- Odhuvars are individuals who perform devotional music and sing hymns in temples, particularly during religious ceremonies and rituals.**
- While they play an essential role in **Saivite temples, they are not priests.**
- Odhuvars are responsible for singing from the **Thirumurai, a collection of ancient Tamil Saivite hymns**, not only during regular pujas but also during special functions and festivals.
- They ensure that the sacred verses are honored and cherished.

Significance of Women Redefining Roles as Odhuvars in Temples

- Gender equality:** Historically, the role of Odhuvars was dominated by men. However, the inclusion of more women as Odhuvars reflects a positive shift towards gender equality and inclusivity in religious practices and temple activities.

- Participation in religious traditions:** It not only provides women with opportunities for active participation in religious traditions but also helps diversify and enrich the cultural and musical aspects of temple worship.
- Social changes:** This development may be attributed to changing social attitudes, increased awareness of **gender equality**, and efforts to promote women's participation in various aspects of society.
- Recognizing women's contributions:** It's a positive step towards recognizing and celebrating the talents and contributions of women in religious and cultural contexts. This achievement is another milestone in Tamil Nadu's journey towards equality.

Efforts of the Tamil Nadu Government for the Appointment of Temple Priests

- Role of caste:** In July 2023, the **Madras High Court ruled that caste will have no role to play in the appointment of temple priests, and that the only criteria for such appointments would be how well-versed a person is in religious texts and rituals.**
- Women as temple priests:** Tamil Nadu's Chief Minister MK Stalin stated that women are all set to enter temples in Tamil Nadu as priests under the **Dravidian model of governance.**
 - The Dravidian model of government has ushered in a new era of inclusivity and equality by appointing people of all castes as priests.
 - Hindu Religious and Charitable Endowments Minister P K Sekar Babu had mentioned in 2021 that women could be appointed as priests in temples following their training.
 - Recently, the Tamil Nadu government trained three women as temple priests at an institution for priest training.

Contributions of Madras in Abolition of Untouchability

- Historic temple entry:** The **temple entry at Madurai Meenakshi Sundareshwarar temple in 1939** is considered a defining moment in the history of the temple entry movement in Tamil Nadu.
 - It was led by Gandhian leaders of the **Madras Harijan Sevak Sangh**, supported by the Congress government.
 - On July 8, 1939, **Dalits** and **Nadars**, the most suppressed communities in the Madras Presidency of British India, successfully entered the famous Meenakshi Sundareshwarar Temple in Madurai, marking a significant step in the struggle against untouchability.

- **Madras Temple Entry Authorization Act, 1947:** This act **authorized the entry into Hindu temples in the Province of Madras by certain classes of Hindus who were excluded from such entry and worship due to custom or usage**, further advancing the fight against untouchability.

Conclusion

- The evolving roles of Odhuvars, especially with the inclusion of more women, signify a positive change in temple practices and a commitment to equality and inclusivity in Tamil Nadu.

MCQs

Question: Which of the following are envisaged by right against exploitation in the constitution of India (**UPSC 2017**)

1. Prohibition of traffic in human beings and forced labour.
2. Abolition of untouchability
3. Protection of the interests of minorities
4. Prohibition of employment of children in factories and mines

Select the correct answer using the code given below;

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

Answer: (c)

In SC Case On Agama, The Contested History Of Temple Priesthood #Caste_System

Priority: High 

Primary Source: The Indian Express

Relevance: Salient features of Indian Society, Diversity of India, Social empowerment

Prepp Prelims Booster: Agama Temples, Archakas

Prepp Mains Booster: Measures to end social inequality, Role of Supreme Court

Context

- Recently, the Supreme Court ordered a status quo on the appointment of **archakas (priests)** in Agamic temples in Tamil Nadu, a move that has triggered a legal battle over reforms introduced by the state government.
- These reforms allow individuals trained in **Agama Sastra** to become priests, irrespective of their caste and gender.
- This development raises complex questions about the intersection of tradition, religion, and gender equality.

Who are the petitioners:

- The **Srirangam Koil Miras Kainkaryaparagal Matrum Athanai Sarntha Koilgalin Miraskain-karyaparargalin Nalasangam**, an association of archakas, has challenged the reforms introduced by the DMK government.
 - These reforms aim to change the hereditary system of appointing archakas in Agama temples.
- The **petitioners claim that the state has infringed on the Constitutionally-protected rights of religious freedom by enabling the appointment of unbelievers as priests.**
- They argue that the secular state has interfered with **essential religious practices**. According to them, it is not possible to attain the necessary knowledge about the Agamas through the government-run certificate course.

Previous Court Rulings:

- **Seshammal & others vs. State of Tamil Nadu (1972):** The Supreme Court held that the appointment of an Archaka is a secular function, and the performance of religious service by the priests is an integral part of the religion.
 - It differentiated between the secular and religious aspects, emphasizing that any individual, regardless of caste or creed, can be appointed as an Archaka if they are well-versed and qualified in the Agamas and the rituals required for temple worship.
- **N. Adithayan vs. Travancore Devaswom Board (2002):** The Supreme Court rejected the customary claim that only Brahmins can perform rituals in temples.
 - It stated that no custom prior to the Constitution could exclude non-Brahmins from performing puja in temples if they were trained and qualified.
- **Guruvayoor Devaswom Case (2004):** The Supreme Court upheld the appointment of non-believers to the temple trust board.
- In 2015, the Supreme Court struck down the 2006 order of the state government and underlined the adherence to Agama Sastras while ensuring that constitutional rights were not violated.
- In 2009, the Madras High Court ruled in favor of a woman priest from Usilampatti, emphasizing the historical precedents of women conducting rituals and the need to eliminate gender bias from temples.



State Government's Actions:

- The state government of Tamil Nadu made significant amendments to the **Tamil Nadu Hindu Religious & Charitable Endowment (HR & CE) Act**.
- In 1971, the government abolished the hereditary appointment of priests, allowing individuals from all castes to become priests.
- In 2006, the government declared all qualified persons eligible to be priests. In 2023, the state issued orders enabling individuals trained in Agama Sastra to become priests irrespective of caste and gender.

The Role of Archakas:

- **Traditionally, archakas are individuals who are trained in Vedic education from a young age**, primarily by family members, including their fathers.
- They are groomed to perform Poojas and Homams and play a crucial role in temple worship. **In Saivism and Vaishnavism, an archa is considered a living incarnation of God in image form.**
- Archakas occupy an essential place in society, believed to ensure peace, prosperity, and prevent misfortune for people through their worship of deities.

Divine Contradictions

- While there is a clear constitutional vision of equality, the Agama tradition continues to influence temple administration in Tamil Nadu.
- The question of temple control has also been a matter of debate, as state control of temples in Tamil Nadu and Kerala has raised concerns.
- There are diverse traditions among different Hindu temples, exemplified by the Sabarimala temple's ban on women's entry and temples like Kondungallur, which celebrate menstrual days with special rituals.
- Critics argue that priesthood must not be viewed merely as employment but as a spiritual exercise.

Agama Tradition

- The Agamas constitute a vast collection of spiritual knowledge and practices traditionally shared through oral traditions like the **Guru-Shishya parampara**.
- They **form the base for most aspects of Hinduism. These texts include Vaishnava Agamas, Saiva Agamas, and Sakta Tantras**, each used in different traditions.
- Agama principles emphasize the importance of following precise rituals and procedures to maintain the sanctity and spiritual efficacy of temples.

UPSC Mains Practice Questions

Q.1) What are the main features of Vedic society and religion? Do you think some of the features are still prevailing in Indian society? **(UPSC GSI 2023)**

Health (GS Paper Prelims) & GS Paper II(Main)

In India, 74% Can't Afford A Healthy Diet: UN Agency Report #Health #Nutritional Security

Priority: Medium



Primary Source: The Hindu

Relevance: Issues relating to health; Issues relating to poverty and hunger; Food Security

Prepp Prelims Booster: 'State of Food Security and Nutrition in the World' (SOFI) Report

Prepp Mains Booster: Issues Related to Poverty and Nutrition, Measures to Avail Food Security

Context:

- In the recently released '**State of Food Security and Nutrition in the World' (SOFI) 2023 report**, it was revealed that the **expense associated with maintaining a nutritious diet has risen in India over the past few years.**
- In a comparison with other BRICS nations (along with the six newly incorporated countries) and India's neighboring countries, India's cost for a healthy diet remains the most economical.

- However, the percentage of individuals capable of affording this nutritious diet remains low.

The data for the charts were sourced from a blog published by the World Bank titled, 'Over 3.1 billion people could not afford a healthy diet in 2021, an increase of 134 million since the start of COVID-19', and the 'State of Food Security and Nutrition in the World (SOFI) 2023'

Chart 1: The chart shows the cost of a healthy diet in terms of PPP dollars per person per day in 2021, the latest year with comparable data

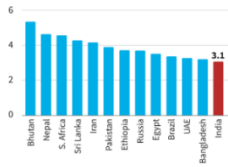


Chart 2: The chart shows the share of the population that is unable to afford a healthy diet in 2021. For instance, in India, 74% were not able to afford a healthy diet

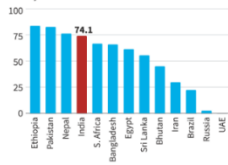


Chart 3: The chart shows the change (in %) in the cost of a healthy diet over the years across regions

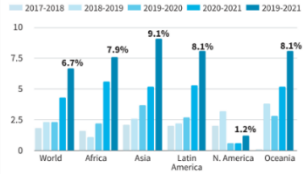
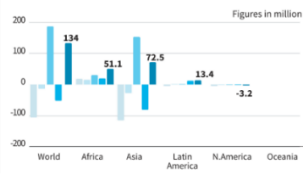


Chart 4: The chart shows the change in the number of people (in million) who were unable to afford a healthy diet over the years across regions



India's Nutritious Diet Data Points

- One of the striking revelations in the report is the significant increase in meal expenses in Mumbai over a span of five years, which surged by 65%.
- In contrast, salaries and wages increased by only 28% to 37% during the same period. Mumbai was chosen as an illustrative model for this analysis due to its consistent and reliable data availability.
- This glaring discrepancy highlights the challenge faced by individuals in India who are struggling to maintain their purchasing power amid escalating food costs.

Determining the Cost of a Nutritious Diet

- The **SOFI report determines the cost of a nutritious diet by analyzing the least expensive local food items that align with dietary recommendations.**
- The cost and accessibility of these food items are calculated using nationwide data averages. The affordability of this diet is assessed by comparing its cost to the mean income in each country.
- A key criterion is that **if the cost of the diet surpasses 52% of a nation's average income, it is considered excessively costly.**
- This percentage is derived from data indicating that **individuals in lower-income nations typically allocate around 52% of their earnings towards food expenses.**
- The subsequent step involves calculating the proportion of individuals within the country who are unable to afford this diet, considering income distributions.

Highlights of the SOFI Report 2023

- **Global Hunger:** The report reveals that **over 122 million more people are facing hunger in the**

world since 2019, primarily due to the pandemic, repeated weather shocks, and, conflicts including the war in Ukraine.

- **Nutritional Access:** Approximately **2.4 billion individuals, largely women and residents of rural areas, did not have consistent access to nutritious, safe, and sufficient food in 2022.**
- **Child Malnutrition:** Alarmingly, **child malnutrition remains high, with 22.3% (148.1 million) of children stunted, 6.8% (45 million) wasted, and 5.6% (37 million) overweight in 2021.**
- **Impact of Urbanization on Diet:** The report notes a noticeable **increase in the consumption of processed and convenience foods as urbanization accelerates.** This trend has contributed to a **spike in overweight and obesity rates across urban, peri-urban, and rural areas.**
- **Rural Dependence on Global Markets:** Previously **self-sustaining rural regions, especially in Africa and Asia, are now increasingly dependent on national and global food markets.**
- **Future Outlook:** With projections indicating that **70% of the global population will reside in cities by 2050, the report emphasizes the need to reorient food systems to cater to these urban populations and address issues related to hunger, food insecurity, and malnutrition.**

SOFI Report

- The **State of Food Security and Nutrition in the World (SOFI) report is an annual flagship report jointly prepared by key organizations, including the Food and Agriculture Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), World Food Programme (WFP), and World Health Organization (WHO).**
- Its purpose is to inform on progress toward **ending hunger, achieving food security, and improving nutrition, providing in-depth analysis of key challenges in the context of the Sustainable Development Goals (SDGs).**
- The report targets a wide audience, including policymakers, international organizations, academic institutions, and the general public.

Global Food Security Indicators

- The report also highlights other global food security indicators, such as the **Global Food Security Index (GFSI), the Food Insecurity Experience Scale (FIES), and the Global Hunger Report. India has been ranked at 68th position according to GFSI 2022, and it was placed at 107**

among 121 countries in the Global Hunger Report 2022.

Various government initiatives to tackle hunger in India

- **National Nutrition Mission (NNM), Poshan Abhiyan**
- **National Food Security Act, 2013**
- **Eat Right India Movement**
- **Zero Hunger Program**
- **Pradhan Mantri Matru Vandana Yojana (PMMVY)**
- **Pradhan Mantri Poshan Shakti Nirman scheme (PM Poshan Scheme)**

UPSC Previous Years Practice Question

Q.1) Explain various types of revolutions, took place in Agriculture after Independence in India. How these revolutions have helped in poverty alleviation and food security in India? **(UPSC GS3 2017)**

Q.2) What are the salient features of National Food Security Act, 2013? How has the Food Security Bill helped in eliminating hunger and malnutrition in India? **(UPSC GS3 2021)**

Q.3) Discuss the consequences of climate change on the food security in tropical countries. **(UPSC GSI 2023)**

MCQs

Question: Which of the following are the objectives of 'National Nutrition Mission'? **(UPSC CSE 2017)**

1. To create awareness relating to malnutrition among pregnant women and lactating mothers.
2. To reduce the incidence of anemia among young children, adolescent girls and women.
3. To promote the consumption of millets, coarse cereals and unpolished rice.
4. To promote the consumption of poultry eggs.

Select the correct answer using the code given below:

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

Answer: (a)

Question: Consider the following statements in the context of intervention being undertaken under Anaemia Mukta Bharat Strategy: **(UPSC CSE 2023)**

1. It provides prophylactic calcium supplementation for pre-school children, adolescents and pregnant women.
2. It runs a campaign for delayed cord clamping at the time of child birth.
3. It provides for periodic deworming to children and adolescents.

4. It addresses non-nutritional causes of anaemia in endemic pockets with special focus on malaria, hemoglobinopathies and fluorosis.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (c)

Nipah Virus Outbreak: What Are Monoclonal Antibodies #Infectious_Diseases #Pandemics

Priority: Medium

Primary Source: The Hindu

Relevance: Issues relating to the development and management of Social Sector/Services relating to Health; Developments in Science and Technology

Prepp Prelims Booster: Nipah Virus, Monoclonal antibodies

Prepp Mains Booster: Issues Related To Nipah and Monoclonal Antibodies

Context

- Recently in response to the recent **Nipah virus outbreak in Kerala, India has reached out to Australia to procure monoclonal antibody doses** to combat the deadly virus.

What are Monoclonal Antibodies?

- **Monoclonal antibodies are laboratory-made proteins designed to mimic the behavior of natural antibodies produced by the immune system.**
- These antibodies are vital components of the immune system's response to foreign substances and diseases.
- They function as **immune system detectives**, identifying and binding to disease-causing molecules, known as antigens, and facilitating their removal from the body.
- The groundbreaking **work on monoclonal antibodies was honored with the Nobel Prize in Medicine in 1984, awarded to Niels K. Jerne, Georges J.F. Köhler, and César Milstein.**
- Monoclonal antibodies play a pivotal role in various domains:
 - **Medical Treatment:** They are employed in treating a wide range of diseases, including **cancer, autoimmune disorders, infectious diseases, and numerous other health conditions.**
 - **Scientific Research:** Monoclonal antibodies are essential tools in scientific investigations, aiding

the study of biological processes, disease mechanisms, and the development of novel therapies.

- **Diagnostic Applications:** They are instrumental in the development of diagnostic tests, enabling the accurate identification and monitoring of various medical conditions.

How Monoclonal Antibodies Work

- **Monoclonal antibodies are specifically engineered to target disease-causing antigens, often proteins.**
- They **function by binding to these antigens, preventing them from functioning normally.**
- The production of monoclonal antibodies involves isolating or synthesizing genes that encode the antibody's binding region and introducing them into host cells using recombinant DNA technology.
- These host cells, which can be bacteria or mammalian cells, act as bioreactors, producing large quantities of monoclonal antibodies that are subsequently purified and prepared for use.
- For instance, the m102.4 monoclonal antibody effectively binds to the receptor-binding glycoprotein of the Nipah virus, potentially neutralizing the virus.

The m102.4 Monoclonal Antibody

- **M102.4 is a fully human monoclonal antibody with the capability to neutralize both Hendra and Nipah viruses, whether inside or outside living organisms.**
- It has successfully completed phase-one clinical trials, determining the appropriate treatment dose without significant side effects.
- Currently, it is used on a compassionate basis when no other authorized treatments are available, and patients cannot participate in clinical trials.
- **The m102.4 monoclonal antibody was initially developed by Dr. Christopher Broder and his team at the Uniformed Services University of the Health Sciences (USU) in Bethesda, Maryland, with support from the U.S. National Institutes of Health (NIH).**

What is Nipah Virus?

NIPAH VIRUS (NiV) INFECTION IS A NEWLY EMERGING ZOOONOSIS THAT CAUSES SEVERE DISEASE IN BOTH ANIMALS AND HUMANS

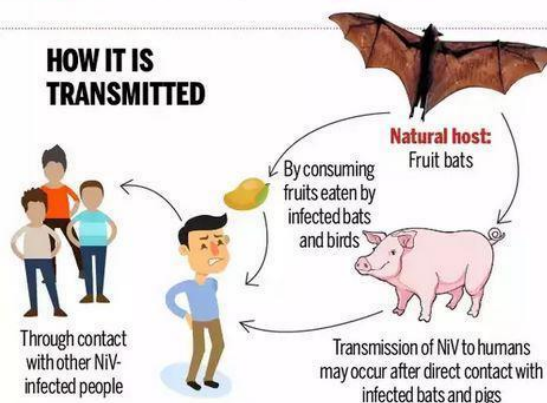


NiV first identified in 1998 during an outbreak in Malaysia



Fruit bats are natural hosts of NiV

HOW IT IS TRANSMITTED



- **Nipah virus is a zoonotic disease**, meaning it is transmitted to humans from infected animals or contaminated food.
- It belongs to a new virus genus termed **Henipavirus. The virus can also be directly transmitted from person to person through close contact with an infected individual.**
- **Currently, there are no vaccines available for both humans and animals.** The Nipah virus was first reported in Malaysia and Singapore in 1998 and 1999, respectively, with the virus taking its name from the Malaysian village where it was first isolated.
- Subsequent outbreaks in Malaysia and other regions resulted in significant casualties, and the virus continues to pose a public health threat, especially in areas with fruit bats as natural reservoir hosts.

Transmission

- The Nipah virus is primarily transmitted from animals to humans, particularly from **fruit bats (Pteropus species), which are considered natural reservoir hosts.**
- **Pigs** can also act as intermediate hosts in transmission. Human-to-human transmission can occur through close contact with respiratory secretions, saliva, urine, or other bodily fluids of infected individuals.
- Additionally, the consumption of fruits contaminated with bat saliva or urine has been implicated in some cases.
- Various government initiatives, including the **National Nutrition Mission (NNM), National Food Security Act**, and more, have been

launched to tackle hunger and malnutrition in India.

MCQs

Question: Consider the following statements:
(UPSC 2017)

1. In tropical regions, Zika virus disease is transmitted by the same mosquito that transmits dengue.
2. Sexual transmission of Zika virus disease is possible.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

Answer: (c)

Indians Continue To Eat More Salt Than WHO Recommendation #Non_Infectious_Diseases

Priority: High



Primary Source: The Hindu

Relevance: Issues relating to development and management of Social Sector/Services relating to Health,

Prepp Prelims Booster: WHO, Salt Consumption

Prepp Mains Booster: Concerns Associated with Higher Salt Intake and Measures

Context

- A recent survey conducted by **the Indian Council of Medical Research (ICMR)** as part of the **National NCD Monitoring Survey (NNMS)** has revealed that **Indians are consuming more salt than recommended by the World Health Organization (WHO)**.
- Excessive salt intake is associated with various health risks, including hypertension, which, according to the study, led to 1.63 million deaths in 2016.

Salt Intake in India

- **The average daily salt intake in India is 8.0g, significantly higher than the WHO's recommended threshold of 5g per day or 2000mg of sodium.**
- Men tend to consume more salt, with an average of 8.9g per day, while women's daily intake averages 7.1g.
- The study indicates a notable urban-rural difference in salt consumption, with higher intake in rural areas.

- Individuals suffering from obesity and high blood pressure were found to have higher salt intake, with 9.2g/day and 8.5g/day, respectively.
- The study also revealed that employed individuals and tobacco users consumed more salt, with daily intakes of 8.6g and 8.3g, respectively.
- Less than half of the participants practiced measures to control dietary salt intake, with the most common step being avoiding meals outside of the home.

Impact of High Salt Intake

- The study highlights the serious consequences of excessive salt consumption, with the **number of deaths caused by hypertension increasing from 0.78 million in 1990 to 1.63 million in 2016.**
- **According to the WHO, reducing the mean population salt intake by 30% by 2025, is a cost-effective method to reduce high blood pressure by approximately 25%.**

Survey Methodology

- Dietary sodium intake was estimated from spot urine samples, and the population mean was calculated using sampling weights.
- The findings of the study are crucial for planning and implementing control measures to address the issue.

Concerns Associated with Higher Salt Intake

- **Excess salt is a significant risk factor for heart health, as it leads to increased blood volume, elevating blood pressure.**
- Over time, high blood pressure **can result in damage to blood vessels, contributing to conditions like atherosclerosis and an increased risk of cardiovascular diseases.**

Cardiovascular Disease (CVD):

- Cardiovascular diseases refer to a group of heart and blood vessel disorders and are a leading global cause of death.
- **In India, CVDs accounted for nearly 28.1% of total deaths.**
- **Risk factors include unhealthy diets, physical inactivity, tobacco use, and alcohol consumption.**

Initiatives to Address High Salt Consumption:

- The **WHO's "Global Report on Sodium Intake Reduction"** aims to reduce sodium intake by 30% by 2030.
- The **"Eat Right India" movement, introduced by the Food Safety and Standards Authority of India (FSSAI)**, promotes healthier diets and reduced salt, sugar, and fat consumption.

- The "**National Programme for Prevention & Control of Non-Communicable Diseases**" focuses on strengthening infrastructure, health promotion, early diagnosis, management, and referral for common NCDs.
- Initiatives like "**AMRIT**" outlets and "**Jan Aushadhi**" stores aim to make affordable medicines available for the treatment of cancer and cardiovascular diseases.
- State-specific programs, such as the "**STEMI Project**" in Maharashtra, focus on the rapid diagnosis and treatment of heart diseases.
- Efforts to reduce salt intake, raise awareness, and promote healthier dietary choices are critical in addressing the public health challenges associated with excessive salt consumption.

UPSC Mains Practice Questions

Q.1) Identify the Millennium Development Goals (MDGs) that are related to health. Discuss the success of the actions taken by the Government for achieving the same. (UPSC GS2 2013)

Q.2) Appropriate local community-level healthcare intervention is a prerequisite to achieving 'Health for All' in India. Explain. (UPSC GS2 2018)

MCQs

Question: Regular intake of fresh fruits and vegetables is recommended in the diet since they are a good source of antioxidants. How do antioxidants help a person maintain health and promote longevity? (UPSC CSE 2011)

- They activate the enzymes necessary for vitamin synthesis in the body and help prevent vitamin deficiency
- They prevent excessive oxidation of carbohydrates, fats, and proteins in the body and help avoid unnecessary wastage of energy
- They neutralize the free radicals produced in the body during metabolism
- They activate certain genes in the cells of the body and help delay the aging process

Answer: (c)

International Relations (GS Paper Prelims)
& GS Paper II (Main)

G20 Summit 2023 Hosted by India
#International_Organizations #G20

Priority: High



Primary Source: The Hindu, Indian Express, HT

Relevance: Global Groupings & Agreements Involving India and/or Affecting India's Interests;

Growth and Development; Conservation, Environmental Pollution and Degradation

Prepp Prelims Booster: What is G-20 Grouping? Major Initiatives

Prepp Mains Booster: G20 Grouping, Related challenges, New Initiatives etc

Context:

- Recently, India hosted the G20 Leaders' Summit 2023 for the first time in history, in its position as Chair of the G-20.
- 43 Heads of Delegation attended the final New Delhi Summit in September 2023, which was the highest ever in G20 history.

G20 Summit 2023

- **Theme:** "**Vasudhaiva Kutumbakam**" or "**One Earth - One Family - One Future**".
- **Invitees:** Other than the members and multilateral institutions, **Bangladesh, Netherlands, Oman, Singapore, Nigeria, Spain, the United Arab Emirates, Egypt, and Mauritius** were invited.
- **Priorities:**
 - **Green Development, Climate Finance, and Lifestyle for Environment (LiFE)**
 - **Accelerated, Inclusive & Resilient Growth**
 - Progress on **SDGs**
 - Technological Transformation and **Digital Public Infrastructure**
 - **Multilateral Institutions for the 21st Century**
 - **Women-led Development**
- **Declaration:** India achieved a unanimous Declaration of all members on developmental and geopolitical concerns.
- It was titled the "**New Delhi Leaders' Summit Declaration**" and reflected India's motto of "**Sabka Saath, Sabka Vikas, Sabka Vishwas**".
- **2024 Presidency:** India formally handed over the G20 Presidency to **Brazil**, which will host the next edition of the G20 Summit in **Rio de Janeiro in 2024**.

Key Outcomes

Outcome	Description	Significance
On the Russia-Ukraine War	<ul style="list-style-type: none"> • The G20 nations agreed that states cannot grab territory by force. • It highlighted the humanitarian 	<ul style="list-style-type: none"> • In a reflection of their growing influence, the Global South represented by India, Brazil, Indonesia,

	<p>crisis faced by Ukraine but did not include a direct criticism and highlighted the suffering of the people of Ukraine, but avoided direct criticism of Russia for the war.</p>	<p>and South Africa was critical in ensuring there was a unified response to the Ukraine conflict.</p>		<p>Jordan, Israel and the European Union.</p>	
<p>Inclusion of African Union</p>	<ul style="list-style-type: none"> The G-20 Summit in New Delhi witnessed the formal inclusion of the African Union as a permanent member of the G-20. 	<ul style="list-style-type: none"> This was part of India's efforts, as host, to make the G-20 more inclusive and reflect the growing role of the Global South. Earlier, South Africa was the only African representative at the G20. 		<p>On climate change</p> <ul style="list-style-type: none"> G-20 members committed to pursuing the goal of tripling renewable energy capacity globally by 2030. They also accepted the need to phase out the unabated use of coal for power generation. They emphasized the financing targets of \$5.8-5.9 trillion in the pre-2030 period for developing countries and \$4 trillion per year for clean energy technologies by 2030. 	<ul style="list-style-type: none"> This is expected to help countries attain net-zero emissions by 2050.
<p>India-Middle East-Europe Economic Corridor (IMEE-EC)</p>	<ul style="list-style-type: none"> The Summit also saw the announcement of the multinational rail and shipping project between India and Europe through the Middle East. Members: India, Saudi Arabia, the United Arab Emirates, 	<ul style="list-style-type: none"> The IMEC aims to boost trade between the regions, improve digital connectivity and delivery of energy resources, and challenge China's economic ambitions in the region. 		<p>Green Development Pact</p> <ul style="list-style-type: none"> It envisions a green development pact that would accelerate the steps needed to tackle environmental challenges 	<ul style="list-style-type: none"> This will help India achieve targets in sectors such as <ul style="list-style-type: none"> Sustainable development Resilient blue economy Food security and nutrition

	<p>and climate change.</p> <ul style="list-style-type: none"> • They resolved to pursue an integrated, holistic, and balanced strategy for sustainable and inclusive economic growth and development. • It reiterated the Chennai principles (sustainable resilient blue economy) and Deccan principles (food security and nutrition) 	<ul style="list-style-type: none"> ○ Climate financing 			
Global Biofuel Alliance	<ul style="list-style-type: none"> • The Global Biofuel Alliance was launched at the New Delhi Summit. • It is an alliance driven by India, the United States, and Brazil, with the aim of addressing urgent energy and economic challenges by popularizing sustainable biofuels. 	<ul style="list-style-type: none"> • It is an indicator of the commitment of countries to pursue sustainable solutions to meet their energy requirements 			
Digital Public Infrastructure (DPI)	<ul style="list-style-type: none"> • The G20 Framework for Systems of Digital Public 	<ul style="list-style-type: none"> • The Repository will be a virtual stack where non- 			
				<p>Infrastructure is a voluntary framework for the development, deployment, and governance of DPI.</p> <ul style="list-style-type: none"> • It has been unanimously accepted by G-20 members. • India's proposal to build and maintain a Global Digital Public Infrastructure Repository was approved. • The members also took note of the proposal to create the voluntary One Future Alliance. 	<p>G20 and G-20 countries can voluntarily share their open-source mechanisms.</p> <ul style="list-style-type: none"> • The Alliance will assist and fund the implementation of digital public infrastructure in low and middle-income countries.
				<p>Multilateral development banks reforms</p> <ul style="list-style-type: none"> • Member countries endorsed and called for the implementation of the G20 Roadmap for Implementing the Recommendations of the G20 Independent Review of MDB's Capital Adequacy Frameworks. 	<ul style="list-style-type: none"> • The CAF recommendations are focused on enabling MDBs to utilize the existing resources effectively

G20 Satellite Mission	<ul style="list-style-type: none"> India has proposed to launch the G20 satellite mission for environment and climate observation. 	<ul style="list-style-type: none"> It will help the countries of the Global South in the environmental and climate initiatives.
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Challenges

- **Difficulty in reaching consensus:** The wide range of economic and political systems among G20 members makes achieving consensus difficult, particularly due to friction on contentious topics like climate change and geopolitical conflict.
- **No Permanent Secretariat:** Since the G20 does not have a permanent secretariat, monitoring of policy and decisions is inefficient.
- **Non-binding decisions:** Member countries are not legally bound to implement the decisions made at G20 meetings.
 - There are no mechanisms to enforce compliance with these guidelines making the organization's decisions ineffective.
- **Limited membership:** The G20's is less global in character as its membership only comprises **19 countries and two international organizations**.
- **Russia-Ukraine War:** Ukraine, which was not invited to the Summit, criticized the Declaration for not explicitly mentioning Russia's aggression towards Ukraine.
- **Transport corridor:** The Declaration did not include details about the financing or time frame of the IMEC project.
- **Biofuel Alliance:** **India is facing major challenges in areas such as malnutrition, food inflation, and poor harvests which could be worsened by converting arable lands for ethanol production.**
- **Climate change:** Although the **G20 nations are collectively responsible for around 80% of global emissions, there was no consensus on phasing out fossil fuels** nor were any plans to amend existing renewable energy policies and targets mentioned.
- **Absence of leaders:** Leaders of major countries like China and Russia missed the summit due to various reasons.
- **Global financial system reforms:** Although the summit discussed restructuring the Bretton Woods-based global financial system, no concrete action plan or timeframes were agreed upon.

- **Debt:** No effective measures were announced to help countries that face a significant debt burden.
- Some international agencies like Oxfam have criticized the summit as uninspiring and underwhelming because of the **perceived lack of action on global challenges such as poverty, inequality, and climate change.**

How was India's Presidency significant?

- **Growing economic influence:** India is the **fastest-growing large economy in the world and G20 presidency** has helped it strengthen its economic ties with other G20 members.
- **Climate change leadership:** India's presidency helped set the tone for global cooperation on climate change reflecting the summit theme of Vasudaiva Kutumbakam.
- **Inclusive growth:** India's presidency has focussed on **inclusive growth**, especially in areas such as **infrastructure development, employment generation, and women's empowerment.**
- **Strategic importance:** The G20 Presidency provided India with a platform to engage with other major powers on matters of global importance and reiterate its role as a **"Vishwaguru"**.
- **Global South:** India has become the voice of the previously sidelined **Global South** by inviting members of the Global South to the summit and championing the inclusion of the African Union.
- **Healthcare:** India's presidency helped it underline its commitment to **ensuring universal, quality, and affordable health services.**
 - India has been recognized as the "Pharmacy of the World" for its role in the development and supply of vaccines and medicines.

What is the G-20?

- The Group of Twenty or G20 is an international forum of the world's leading industrialized and emerging economies.
- It was established in 1999 in response to the Asian financial crisis and initially served as a regular forum for Finance Ministers and Central Bank Governors.

Objectives

The G20 has three core objectives:

- **Policy coordination:** Facilitate policy coordination among members to achieve global economic stability and sustainable growth, and address uncertainties.
- **Financial regulation:** Promote financial regulations that reduce risks and help prevent future financial crises through a robust

regulatory framework for the global financial system.

- **International financial architecture:** Create a new international financial architecture by reforming existing global financial institutions and structures to address current economic challenges.

Membership

- It consists of 19 countries and two international organizations.
 - **Countries:** Canada, France, Germany, Italy, Japan, the United Kingdom, the United States, Russia, Australia, Canada, Saudi Arabia, India, South Africa, Turkey, Argentina, Brazil, Mexico, China, and Indonesia.
 - **International organizations:** European Union and African Union.

Organization

- **Presidency:** The presidency rotates among the member countries.
 - India will hold the presidency from December 2022 to November 2023 and will be succeeded by Brazil.
- **Secretariat:** The G20 does not have a permanent secretariat.
- **Troika:** The "Troika" comprises the past, present, and future presidents.
 - **For 2023, the Troika consists of Indonesia, India, and Brazil.**

Structure

- The G20 operates through various working tracks:
 - **Finance Track:** It convenes four times a year and focuses on financial and economic issues. It involves Finance Ministers and Central Bank Governors.
 - **Sherpa Track:** Established after the inception of the G20 Leaders' Summit in 2008, this track covers non-financial issues, including those related to political and social aspects.
 - **Engagement Groups:** This unofficial track comprises non-governmental participants including civil society, businesses, and other stakeholders from member countries.
- G20 members also work closely with international organizations such as the International Monetary Fund (IMF), the World Bank, and the World Trade Organization (WTO).

Prelims PYQs

Question: In which one of the following groups are all four countries members of G20? (UPSC CSE 2020)

- Argentina, Mexico, South Africa and Turkey
- Australia, Canada, Malaysia and New Zealand
- Brazil, Saudi Arabia, and Vietnam
- Indonesia, Japan, Singapore, and South Korea

Answer: (a)

India-Middle East-Europe Corridor: The Way To A New World Order #International_Transport_Corridors

Priority: High



Primary Source: The Indian Express

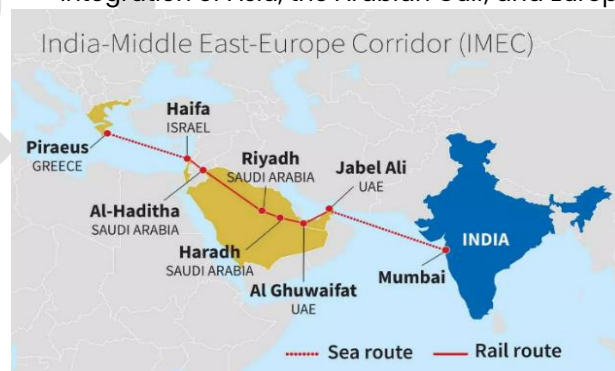
Relevance: Bilateral, regional, and global groupings and agreements involving India and/or affecting India's interests, Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Prepp Prelims Booster: India-Middle East-Europe Corridor

Prepp Mains Booster: Issues Related to the India-Middle East Economic Corridor

Context

- Recently, the leaders of India, the U.S.A, Germany, Saudi Arabia, the UAE, Italy, and the EU unanimously agreed to establish the **India-Middle East-Europe Economic Corridor (IMEC)**.
- The IMEC is designed to provide transport connectivity to accelerate the development and integration of Asia, the Arabian Gulf, and Europe.



What is the India-Middle East Economic Corridor?

- The India-Middle East-Europe Economic Corridor (IMEC) is a **reliable and cost-effective railway and ship-to-rail transit network that aims to supplement maritime and road routes**.
- It is part of the Partnership for **Global Infrastructure Investment (PGII)** which was created by the **G-7** as an alternative to the **China-led Belt and Road Initiative (BRI)**.
- **Components:** It consists of two corridors:
 - **East Corridor: India to the Arabian Gulf**

- **West Corridor: Arabian Gulf to Europe**
- It will enable the easier movement of goods and services between India and its partners – UAE, Saudi Arabia, Jordan, Israel, and the EU.
- **Members: India, the U.S.A., Saudi Arabia, the U.A.E., France, Germany, Italy, and the EU.**

Why is it necessary?

- **Improved trade:** The IMEC will boost regional trade and create a new regional route connecting Asia and Europe.
- The region has not been utilized despite its potential for boosting connectivity due to the **shorter transit times, easier accessibility, and multimodal connectivity.**
- **Challenges with existing routes:** Existing maritime corridors like the **Suez Canal and Mediterranean routes are affected by congestion, long transits, and higher logistics costs.**
- **Potential expansion:** It can be expanded to cover sectors such as energy pipelines and optical fiber links.
- **Geopolitical shifts:** It is an opportunity to strengthen India's ties with West Asian countries like UAE and Saudi Arabia.
- **Infrastructure for peace:** It could contribute to **lowered tensions in the Arabian Peninsula by encouraging interregional connectivity.**

How will it work?

- IMEC offers shorter routes by linking major West Indian ports like **JNPT, Kochi, Kandla, and Mundra** with major Gulf shipping ports like **Jebel Ali, Fujairah, Ras Al-Khair, Dammam, Duqm, and Salalah.**
- The Saudi rail network will be used to transport cargo through Israel and Jordan.
- **Haifa**, a deep seaport, can handle bulk container trains to European ports in Greece, Italy, France, and Spain.
- The goods will then be transported across Europe via road container trailers or container cargo trains.

Land-bridging

- Rail links, terminals, and inland container depots have to be constructed at all major Gulf and Mediterranean ports for the transshipment of cargo from ship to rail and rail to ship.
- The **Eastern corridor includes India's well-integrated railroad network, mega ports, and highways** and the **Western Corridor consists of a well-developed and explored sea route across the Mediterranean to Europe, and excellent hinterland connectivity via rail and road.**

- India can support the implementation of rail projects in West Asia through its rail PSUs such as **IRCON, RITES, DFCC, RailTel, and CONCOR.**

Hinterland connectivity

- The **Gulf Cooperation Council** is constructing a north-south coastal railway network to connect ports along Kuwait and Muscat.
- This will have to be connected to the **Saudi Arabian Rail network** which must be extended up to Haifa.

Significance of the project

Global connectivity

- IMEC is a sustainable alternative to existing initiatives for global connectivity.
- It offers an efficient alternative to the Suez Canal for cargo ships as well as enhanced connectivity, logistics, clean energy production, and economic cooperation in the region.

Improved access to West Asia

- The IMEC will **eliminate Pakistan's monopoly of the inland connectivity between India and West Asia**, which has prevented India from improving its access to West Asia and Central Asia.
- It will **reduce India's reliance on Iran's Chahbahar port** and the **International North-South Transport Corridor (INSTC).**

Geopolitical ties

- **India's economic and diplomatic ties with France, Germany, and the EU will improve.**
- IMEC is an opportunity for India to participate in the proposed **Trans-African Corridor.**
- It will help **enable India-U.S. convergence in West Asia** and build upon achievements such as the **I2U2.**

Competitive trade

- **Trade between India and Europe is expected to become 40% faster** due to the IMEC.
- Indian exports will thus become more competitive in the European market by due to lower logistic costs.

Multilateral funding

- Securing funding from multilateral institutions will be easier due to commitments made by member states and potential high returns.

Green and sustainable growth

- IMEC also includes plans to lay **electric cables and clean hydrogen pipelines** as part of its efforts to **reduce greenhouse emissions.**

Regional integration

- IMEC could help integrate India, West Asia, and Europe enabling unprecedented levels of growth.

- It will regional development and cement India's position as a regional leader with technical leadership and forward-oriented strategies.

Challenges

- Lack of clarity:** There is a lack of clarity over the official timelines for the project, its expected date of completion, and other details such as the use of existing railway and port infrastructure in West Asia.
- Non-binding nature:** While the MoU of the IMEC does not provide any rights or obligations under international law, it only sets out **non-binding political commitments** for its participants.
- Finance:** Funding could be affected by **recession in advanced economies** and challenges in mobilizing hybrid capital.
- Chinese opposition:** China is likely to oppose the project due to its potential to impact the BRI.

Conclusion

- IMEC can act as a catalyst for collective growth, globalization, and connectivity and lead to similar regional and global cooperation initiatives for socio-economic development across the world.

UPSC Mains Practice Questions

Q.1) China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia', In the light of this statement, discuss its impact on India as her neighbour. (UPSC GS2 2017)

Q.2) How will the I2U2 (India, Israel, UAE, and USA) grouping transform India's position in global politics? (UPSC GS2 2022)

MCQs

Question: Which of the following is not a member of 'Gulf Cooperation Council'? (UPSC CSE 2016)

- Iran
- Saudi Arabia
- Oman
- Kuwait

Answer: (a)

Question: Belt and Road Initiative is sometimes mentioned in the news in the context of the affairs of (UPSC CSE 2016)]

- African Union
- Brazil
- European Union
- China

Answer: (d)

African Union Becomes Permanent Member of G-20 #International Organizations #G20 #African_Union

Priority: High



Primary Source: The Hindu

Relevance: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests

Prepp Prelims Booster: African Union, G-20

Prepp Mains Booster: Opportunities associated with Africa's addition to G-20

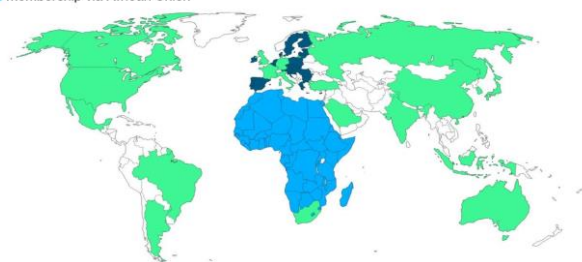
Context

- Recently, the African Union was granted full membership to the G-20, becoming the second regional bloc with membership in the grouping.

Africa's addition to the G-20

- In a move to strengthen the G20 and reflect the growing influence of the **Global South**, the G20 under India's Presidency, the G-20 added a new member - the **African Union**.
- It was part of India's strategy of "**Sabka Saath**" and a step towards establishing a just, fair, inclusive, and representative global architecture and governance system.
- The decision was supported by G-20 members like China, Russia, the U.S.A., and France despite differences on other issues.
- This was an opportunity for India to showcase its soft and hard power and contribute to building its global influence.

■ Individual G-20 members ■ Membership via EU
■ Membership via African Union



Response of African nations

- Azaly Assouman, the Chairperson of the AU and President of Comoros urged G-20 member countries to invest in the industrialization of the continent and to encourage the manufacture of goods using African resources.
- He recognized that African countries would have to cooperate with the rest of the world to provide training for its citizens, in order to develop job security and raise the standard of living of the people.

What is the African Union?

- The **African Union (AU)** is an intergovernmental organization of **55 African**

states which was established in 2002 to succeed the Organization of African Unity (OAU).

- **Objectives:**
 - Promoting unity, cooperation, and development across the continent.
 - Address social, political, and economic challenges faced by African nations.
 - Promoting peace, security, and stability in Africa.
- **Members:** Algeria, Angola, Benin, Botswana, Burkina Faso (suspended), Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Republic of the Congo, the Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon (suspended), Gambia, Ghana, Guinea (suspended), Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali (suspended), Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger (suspended), Nigeria, Rwanda, Sahrawi Arab Democratic Republic, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan (suspended), Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.
- **Structure:**
- **Assembly:** It consists of the Heads of State and Heads of Government and is the highest decision-making body.
- **Executive Council:** It is composed of the Foreign Affairs ministers of member nations and handles policy matters and makes recommendations to the Assembly.
- **AU Commission:** It is the Secretariat or administrative arm of the African Union.
 - It is responsible for implementing decisions taken by the Assembly and the Executive Council.
 - It is headquartered in Addis Ababa.
- **The Peace and Security Council:** It is responsible for maintaining peace and security on the continent.
- **Other key bodies:** The Regional Economic Communities (RECs), the African Peer Review Mechanism, and the Pan-African Parliament and the Economic, Social & Cultural Council (ECOSOCC).
- **Judicial and legal bodies:** African Commission on Human and Peoples' Rights (ACHPR), African Court on Human and

Peoples' Rights (AfCHPR), AU Commission on International Law (AUCIL), AU Advisory Board on Corruption (AUABC) and the African Committee of Experts on the Rights and Welfare of the Child.

- **Financial institutions:** African Central Bank, The African Investment Bank, and the African Monetary Fund.

Impact of AU's inclusion in the G-20

- **Inclusiveness:** The AU's entry into the G-20 gives the **Global South an opportunity to participate in the redesigning of the global trade, finance, and investment frameworks.**
 - They have been demanding more meaningful roles in multilateral bodies and reforms in the global financial system.
 - The African Union will be able to present a unified position on global issues such as the inequitable sharing of vaccines and medical supplies in the aftermath of the COVID-19 pandemic.
- **Shifting perception:** It will help **redefine Africa as a global power rather than a region affected by war, extremism, hunger, and disasters.**
 - Africa is attracting new geopolitical and economic partnerships besides its long-standing partners - U.S.A., and Europe - such as **China (Africa's largest trading partner and lender), Russia (leading arms provider), and West Asian nations (largest investors).**
- **Economic:** The AU's member states include economic powers such as Nigeria and Ethiopia as well as some of the world's poorest nations.
 - The **AU represents the world's largest free trade area and is enormously rich in the resources the world needs to combat climate change.**
 - Africa hosts **60% of the world's renewable energy assets and more than 30% of the minerals key to renewable and low-carbon technologies.**
 - The G-20 can help Africa take advantage of its resources and ensure industrial development benefits the domestic economies instead of foreign countries.
- **India's role:** It reaffirmed India's commitment to its stated goal of empowering the Global South and becoming the voice of the Global South.

How is Africa significant for India?

- **Security:** The **Horn of Africa** is in close proximity to India and is a critical element of India's security interests in the Indian Ocean.
 - This is extremely significant due to concerns over **radicalism, piracy, and organized crime** which can adversely impact India's maritime trade.

- **Multilateral reforms:** India requires Africa's support if it aims to achieve its ambition of a **permanent seat on the UN Security Council**.
- **Peacekeeping:** India actively participates in UN peacekeeping operations and capacity building in African countries, it is necessary to strengthen bilateral ties.
- **Guests:** India's commitment to cooperation with Africa is evidenced by the invitations to **Nigeria, Egypt, and Mauritius** to participate at the G-20 summit.
- **Diversifying energy sources:** Africa can help India diversify its energy sources, aligning with the **Integrated Energy Policy**.
- Africa is rich in valuable minerals, metals, and abundant agricultural land which can help India address its **food security** and **resource requirements**.
- **Trade:** Indian investments and trade expansion with African countries can also foster economic cooperation.

UPSC Mains Practice Questions

Q.1) If the last few decades were of Asia's growth story, the next few are expected to be Africa's." In light of this statement, examine India's influence in Africa in recent years. **(UPSC GS2 2021)**

Q.2) Increasing interest in India in Africa has its pros and cons. Critically examine. **(UPSC GS2 2015)**

Q.3) The long-sustained image of India as a leader of the oppressed and marginalized nations has disappeared on account of its newfound role in the emerging global order.' Elaborate **(UPSC GS2 2019)**

MCQs

Question: In which one of the following groups are all four countries members of G20? (UPSC CSE 2020)

- Argentina, Mexico, South Africa and Turkey
- Australia, Canada, Malaysia and New Zealand
- Brazil, Iran, Saudi Arabia and Vietnam
- Indonesia, Japan, Singapore, and South Korea

Answer: (a)

Abraham Accords Has Completed 3 Years
#International_Peace_Pacts

Priority: Medium



Primary Source: The Hindu

Relevance: Bilateral, Regional and Global Groupings and agreements involving India

Prepp Prelims Booster: What is Abraham Accords?

Prepp Mains Booster: Key features of Abraham Accords, India and the Abraham Accords

Context

- The **Abraham Accords**, the agreement between the United States (US), the United Arab Emirates (UAE) and Israel, which was signed in September 2020 completed 3 years in September 2023.
- The Accords, which marked the first normalisation of ties between Israel and Arab countries were later extended to Sudan, Bahrain and Morocco.

Key features of the Abraham Accords

- It recognizes the need to **strengthen and maintain peace in West Asia**.
- It promotes religious freedom **religious freedom**, and intercultural and interfaith dialogue.
- It seeks to **end conflict and radicalisation** in the region.
- It promotes the **use of art, medicine, science and commerce in bringing peace** to West Asian countries.
- It seeks to **expand friendly relations between Israel and its neighbours** in the spirit of a shared commitment to a better future

Positive outcomes through the Accords

- **Diplomatic Ties:** An Israeli embassy was opened in Abu Dhabi and a UAE embassy was opened in Tel Aviv.
- **Economic Ties:** Trade between Israel and other West Asian countries increased by 74% between 2021 and 2022.
- **Energy and water:** A UAE-owned firm will be constructing a 600 megawatts solar energy facility in Jordan to provide energy to Israel.
 - A desalination plant in Israel would deliver 200 million cubic metres of water to Jordan.
- **Educational Ties:** Students from the UAE and Morocco have enrolled in Israeli universities in large numbers.
 - Bahrain has signed agreements with Israel to advance student and professor exchanges.
 - UAE has incorporated Holocaust education into its school curriculum as a mandatory subject to foster coexistence and religious tolerance between the people of Israel and Arab Countries.
- **Tourism and Cultural Ties:** There has been a significant increase in the number of Israelis flying to Arab countries while Arabs have been able to visit holy sites in Israel like the **Al-Aqsa mosque**.

Challenges ahead of Abraham Accord

- The UAE is facing challenges in working with the current Israel's most extreme government ever.
- The UAE has condemned Israel's violations of basic Palestinian rights.

Arab countries with diplomatic ties to Israel



India and the Abraham Accords

- The Indian diaspora in the Gulf region now has the facilities of direct flights between the UAE and Israel, as well as between Israel and Bahrain.
- Successful establishment of the **I2U2 Group (also known as West Asian Quad)**, formed by **Israel, India, the UAE, and the U.S.A.**
- It will primarily focus on **joint investments in critical areas such as water, energy, transportation, space, health, and food security.**
- The Emirati project for a robotic solar panel was endorsed by Eccopia, an Israeli company, which has a manufacturing base in India.
- In December 2020, the International Federation of Indo-Israel Chamber of Commerce (IFIICC) was established in Dubai.

UPSC Mains Practice Questions

Q.1) How will I2U2 (India, Israel, UAE and USA) grouping transform India's position in global politics? **(UPSC GS2 2022)**

Q.2) The question of India's Energy Security constitutes the most important part of India's economic progress. Analyze India's energy policy cooperation with West Asian Countries. **(UPSC GS2 2017)**

Prelims PYQ

Q. Consider the following statements :

Statement-I : Israel has established diplomatic relations with some Arab States.

Statement-II : The 'Arab Peace Initiative' mediated by Saudi Arabia was signed by Israel and Arab League.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

(c) Statement-I is correct but Statement-II is incorrect

(d) Statement-I is incorrect but Statement-II is correct

Answer: (b)

The Implications Of The Expansion Of BRICS #International_Organizations_BRICS

Priority: High



Primary Source: The Hindu

Relevance: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests, India and its neighborhood-relations.

Prepp Prelims Booster: What are BRICS countries?

Prepp Mains Booster: Issues Related to BRICS and its Expansion, Significance of expansion

Context

- Recently, BRICS members announced at the XVth Summit being held in Johannesburg that 6 new countries - Iran, Saudi Arabia, UAE, Ethiopia, Egypt, and Argentina - would be joining the grouping.
- **This article discusses the expansion of BRICS and the opportunities and challenges presented by it to the existing members and prospective members.**

BRICS

- **BRICS is an acronym for the grouping of Brazil, Russia, India, China, and South Africa that exists as an annual summit between the leaders of the member countries.**
- **Expansion:** 40 countries had expressed interest in gaining BRICS membership of which 22 submitted formal applications and six countries were invited to join.

New members:

- **West Asia:** Iran, Saudi Arabia, UAE
- **Africa:** Egypt and Ethiopia
- **Latin America:** Argentina
- **The expansion of BRICS' is part of the group's commitment to diversifying its membership and strengthening its global presence.**

How does BRICS challenge the Western-Dominated World Order?

- BRICS members have expressed a shared dissatisfaction with the Western-dominated international institutions such as the [World Bank](#),

IME, UN, and its bodies, which were established in the aftermath of World War II.

- BRICS seeks to challenge this order through:
 - **Intra-BRICS Cooperation: BRICS has aimed to develop consensus among members through economic and political cooperation.**
 - **Building Alternative Institutions:** BRICS has suggested the creation of **alternate multilateral institutions** that are **not dominated by the West.**
 - **Multilateral Reforms:** BRICS members have advocated for multilateral institutional reforms to **reflect the interests of emerging economies.**
- The BRICS members reject the **Western short-sighted view of an emerging global binary divide and the “new cold war”.**
- They have insisted on asserting their **strategic autonomy in a multipolar world** order to ensure their interests are protected.
- The war in Ukraine has united the West on one flank and strengthened the China-Russia partnership on the other, making BRICS a suitable avenue to challenge the Western geopolitical worldview and establish a suitable counterweight.

What is the significance of the expansion of BRICS?

Economic:

- The addition of the six new members, has increased BRICS's economic influence.
- **GDP: BRICS now accounts for 37% of global GDP (in PPP terms), more than the G-7's share of 30.7%.**
- **Global Trade:** The **share of BRICS in global exports (23%) and imports (19%) will increase by 3.7% and 3% respectively.**
- **Energy: BRICS's share in global output of oil production will increase from 20% to 42%.**

Geo-Strategic

- Saudi Arabia, UAE, and Iran already have strong ties with BRICS members in energy and trade.
 - Despite U.S. sanctions, Iran has increased oil production, with much of it going to China.
- Russia which is a major supplier of oil to China and India is looking to expand to Brazil.
- Membership in BRICS is a message from Iran and Russia to the West that they have global allies and friendships.
- Egypt and Ethiopia, which also have strong ties with the U.S.A., are strategically important for trade due to their location in the Horn of Africa and the Red Sea respectively.
- Argentina is the second-largest economy in Latin America but is facing an economic crisis.

- Therefore, financial aid from BRICS will be key to its recovery.

Outlook for regional and global affairs

- The new members are a natural fit into the political and economic framework of BRICS.
- The West Asian members have displayed an alignment with the BRICS goals of independent foreign policy-making by reducing their dependence on the U.S.A.
- Saudi Arabia ended the Qatar blockade in January 2021 through de-escalation and dialogue and is engaging with Turkey and Iran.
- In March 2023, regional rivals **Saudi Arabia and Iran signed an accord mediated by China.**
- **The UAE has also normalized ties with Iran** and is focusing on expanding its maritime footprint across the **Gulf, the Gulf of Aden, the Red Sea, and the Horn of Africa**
- Iran's entry into BRICS opens up opportunities for accelerated regional economic cooperation in the country.
 - This will include the revival of connectivity projects through the **Chabahar port** in which India holds a significant interest.

Criticism of BRICS

- **Divergent National Interests:** BRICS members have diverse economic and political priorities, which leads to a conflict of interests.
 - E.g.: The trade-deficit-related disputes between India and China.
- **Economic Inequalities:** The benefits of cooperation are not equitably distributed due to the **economic disparities among members.**
 - E.g. South Africa struggles to compete with larger economies like India and China for investment and trade opportunities.
- **Geopolitical Competition:** Cooperation among members is impacted by the **geopolitical rivalries and regional conflicts** among members such as China's territorial disputes in the South China Sea and **India's concerns over freedom of navigation.**
- **Political Diversity:** The governance and diplomatic policies of BRICS countries differ due to the various political systems and freedoms followed.
 - E.g.: India, Brazil, and South Africa are democratic systems while Russia and China are less democratic.
- **Inadequate Infrastructure:** Trade and cooperation between the members have been adversely impacted by the **lack of adequate**

infrastructure and connectivity which hinders the movement of goods and services.

- **Institutional Limitations:** BRICS institutions such as the **NDB** are limited in terms of resources, decision-making capacities, and lending ability in comparison to more established institutions like the World Bank.
- **Rotation of leadership:** The BRICS presidency is rotated annually among the members which impacts the continuity of the group's priorities.

BRICS Institutional Framework

- BRICS has hosted annual summits, and ministerial and expert conclaves since its inception in 2009.
- BRICS has established two major institutions as part of its institutional framework that empowers member nations to collaborate outside Western-dominated institutions.

New Development Bank (NDB):

- The **NDB** was established as a **multilateral development bank** to provide **development assistance for infrastructure and sustainable development projects in emerging markets and developing countries (EMDCs)**.
- It was established as part of the **BRICS Summit held in Fortaleza** in 2014.
- It is **headquartered in Shanghai**, China, and has regional offices in South Africa and Brazil.
- **Members:** Brazil, Russia, India, China, South Africa, Bangladesh, UAE, Egypt, and Uruguay.
- **Membership is open to members of the United Nations.**
- Although the voting power of each member is equal to its subscribed shares in the capital, the share of the BRICS nations can never be less than 55%.
- The NDB has already financed 96 projects valued at \$33 billion.

Contingent Reserve Arrangement (CRA):

- The CRA mechanism was established in 2015 to **support member countries that are facing short-term balance-of-payments crises and protect against global liquidity pressures.**
- The legal basis for the CRA was signed in Fortaleza, Brazil, in 2014.
- It has a total lending capacity of \$100 billion.

UPSC Mains Practice Questions

Q.1) "The USA is facing an existential threat in the form of China, that is much more challenging than the erstwhile Soviet Union." Explain. **(UPSC GS2 2021)**

Q.2) Critically examine the aims and objectives of SCO. What importance does it hold for India? **(UPSC GS2 2021)**

Q.3) "The long-sustained image of India as a leader of the oppressed and marginalized nations has disappeared on account of its newfound role in the emerging global order.' Elaborate. **(UPSC GS2 2019)**

Prelims

Question: With reference to a grouping of countries known as BRICS, consider the following statements.

1. The First Summit of BRICS was held in Rio de Janeiro in 2009.
2. South Africa was the last to join the BRICS grouping.

Which of the statements given above is/are correct? (UPSC CSE 2014)

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

Answer: (b)

Question: Consider the following statements:

1. New Development Bank has been set up by APEC.
2. The headquarters of the New Development Bank is in Shanghai.

Which of the statements given above is/are correct? (UPSC CSE 2016)

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer:(b)

Philippines, Malaysia, Indonesia, Nepal Protest China's
New Map #India_China_Relations

Priority: High 

Primary Source: The Hindu

Relevance:

Prepp Prelims Booster: Mapping, south China Sea, Countries neighbouring China, Spratly islands, Paracel Islands etc

Prepp Mains Booster: Issue of India China border Disputes

Context

- Recently, the Philippines, Malaysia, Indonesia, and Nepal released separate statements opposing

China's new "standard map" for 2023, which has also drawn a strong protest from India.

- The map showed all of **the Indian State of Arunachal Pradesh, Aksai Chin, as well as the entire South China Sea within China's borders.**
- China's issuance of new maps, which include disputed territories, has raised concerns among its neighbors as it could complicate ongoing negotiations over territorial disputes.

Countries Reject Chinese Standard Maps

- **Philippines:** The Philippines' Foreign Ministry issued a statement rejecting China's 2023 version of the "standard map." and specifically objected to the inclusion of the **nine-dash line.**
- The Philippines argues that this attempt by China to assert sovereignty and jurisdiction over Philippine features and maritime zones is not grounded in international law, particularly the **United Nations Convention on the Law of the Sea (UNCLOS)** from 1982.
- **Malaysia:** Malaysia's government also protested against China's map, rejecting it due to its **inclusion of unilateral claims to Malaysian maritime territory**, including parts of Malaysia's Exclusive Economic Zone (EEZ).
- **Indonesia:** Indonesia issued a statement emphasizing that any drawing of territorial lines, including those in China's 2023 Standard Map, should be in line with the UN Convention on the Law of the Sea (UNCLOS) from 1982.
- **Nepal:** Nepal rejected the Map released by China that includes areas of **Limpiyadhura, Kalapani, and Lipulekh** as part of India.
- Nepal reiterated its position regarding the political map that Parliament endorsed in 2020 and asked the international community to honor the political map.



What is the source of India-China tension?

- **A Disputed Border and Shifting Dynamics:** The primary source of tension lies in the **ill-defined, 3,440 km-long border** that divides the two nations.

- **Rivers, lakes, and shifting snowcaps contribute to the changing demarcation**, causing frequent face-offs between soldiers at various points.
- The ties between India and China were severely strained following the eastern Ladakh border row that began in May 2020.
- The Indian and Chinese troops are locked in an over three-year confrontation in specific friction points in eastern Ladakh even as the two sides completed disengagement from several areas following extensive diplomatic and military talks.
- **Infrastructure:** Both countries are also engaged in infrastructure construction along the border.
 - India's construction of a high-altitude air base road was a key trigger for a deadly clash in 2020.
- **Confrontation:** The **2020 Galwan Valley** confrontation resulted in casualties on both sides, marking the first fatal clash since 1975.
 - The use of firearms, previously prohibited by a 1996 agreement, occurred in 2021, heightening the danger.

Conclusion

- China's new maps are seen as an unnecessary provocation by its neighbours as it can contribute to regional instability and hinder efforts to find peaceful resolutions to border disputes.

Why is the South China Sea Important?

- The South China Sea is a marginal sea of the Western Pacific Ocean.
- **Borders:** It is bordered in the north by the coast of South China, in the west by the Indochinese Peninsula, in the east by Taiwan's islands, in the southeast by Borneo, in the east by eastern Sumatra, and in the southwest by the Bangka Belitung Islands.
- **Major shipping route:** According to the **United Nations Conference on Trade and Development** estimates that over **21% of global trade, amounting to \$3.37 trillion**, transited through these waters in 2016.
- **Fishing grounds:** It is also home to rich fishing grounds that provide for the livelihoods of millions of people and more than half of the world's fishing vessel.
- **Natural Resources:** According to estimates, the Paracels and the Spratlys are rich in reserves of natural resources.

What are the disputes in the South China Sea?

- The South China Sea and its land features are **actively claimed by six countries.** Among these controversies are:
 - **Paracels: Vietnam, China, and Taiwan**

- **Spratlys: Brunei, Malaysia, the Philippines, China, Taiwan, Vietnam, and**
- **China: The South China Sea, its resources, and nearly all of its land features**

[Republic of Philippines v. People's Republic of China: Permanent Court of Arbitration](#)

- In the Republic of Philippines v. People's Republic of China case, the Permanent Court of Arbitration issued a unanimous decision that no feature in the **Spratly Islands, including Taiwan-occupied Itu Aba (or Taiping Island)**, is an island under the United Nations Convention on the Law of the Sea (UNCLOS), and that China's nine-dash line claim and related claims to historic rights are invalid under international law and that it is forbidden for Chinese ships to physically hinder Philippine ones.

[Indo-Nepal border dispute](#)

- **Kalapani is a strategically important tri-junction between India, China and Nepal in the Pithoragarh district of Uttarakhand.**
- In 1997, Nepal raised objections after India and China agreed to open the **Lipulekh pass** to facilitate a travel route to Mansarovar.
- Nepal claims Kalapani is part of its Darchula district in Sudur Paschim Pradesh.
- Kalapani is largely a valley formed by a mess of Himalayan rivers, contributing to what is known as **Kali, Mahakali or Sharda River** at various points in Nepal and India.
- Key to the disagreement over Kalapani is the origin of **River Kali**. There are varied views regarding this river and its source.
- Lipulekh sits atop the Kalapani Valley and forms a tri-junction between India, Nepal and China.
- It is an ancient trade and pilgrimage route made famous locally by the **Bhutiya** people who have inhabited the region for centuries.
- The map endorsed by Nepalese Parliament includes 335-km land area including **Limpiyadhura** in the Nepalese territory.
- It was drawn on the basis of the **Sugauli Treaty of 1816** signed between Nepal and then the British India government and other relevant documents, which suggests Limpiyadhura, from where the Kali River originated, is Nepal's border with India.

Mains PYQ

Q.1) With respect to the South China sea, maritime territorial disputes and rising tension affirm the need for safeguarding maritime security to ensure freedom of navigation and over flight throughout the region. In this context, discuss the bilateral issues between India and China. (UPSC GS2 2014)

Prelims PYQs

Question: Which one of the following Himalayan Passes was reopened around in the middle of the year 2006 to facilitate trade between India and China? UPSC CSE 2007)

- (a) Chang La
 - (b) Jara La
 - (c) Nathu La
 - (d) Shipki La
- Answer:(c)

[Fresh Clash Between Armenia And Azerbaijan](#)
[#Conflict_Regions_In_World](#)

Priority: Medium

Primary Source: The Hindu

Relevance: Effect of Policies & Politics of Countries on India's Interests

Prepp Prelims Booster: Current events of national and international importance

Prepp Mains Booster: Armenia-Azerbaijan border dispute, Nagorno-Karabakh

Context

- Recently, four Armenian soldiers were killed after Azerbaijani shelling near the border town of Sotk, northwest of the breakaway region of **Nagorno-Karabakh**.
- Azerbaijan accused Armenia of building up troops along the two countries' volatile borders in August, while Armenia accused Azerbaijan's military of opening fire on European Union observers.



Background of Nagorno-Karabakh Conflict

- The **Nagorno-Karabakh region, internationally recognized as part of Azerbaijan**, has been a

focal point of conflict between Armenia and Azerbaijan since the dissolution of the Soviet Union in 1991.

- Despite mediation efforts by the EU, USA, and Russia, the two sides have not been able to reach a lasting peace settlement.
- The unresolved disputes and sporadic clashes in the region continue to fuel tensions, posing a persistent threat to stability in the **South Caucasus**.

Armenia and Azerbaijan

Armenia

- It is a **landlocked country in the Armenian Highlands of West Asia**, with geopolitical ties to Europe.
- **Borders:** It is a part of the Caucasus region and is bordered by Turkey to the west, Georgia to the north and Azerbaijan to the east, and Iran and the Azerbaijani exclave of Nakhchivan to the south.
- **Yerevan** is the capital and largest city.

Azerbaijan

- It is a **transcontinental country located at the boundary of Eastern Europe and West Asia**.
- **Borders:** It is a part of the South Caucasus region and is bounded by the Caspian Sea to the east, Russia (Republic of Dagestan) to the north, Georgia to the northwest, Armenia and Turkey to the west, and Iran to the south.
- **Baku** is the capital and largest city.

Strategic Significance

- The **region between the Black Sea and the Caspian Sea, known as the Caucasus**, plays a crucial role in energy transportation due to its pipelines connecting resource-rich Azerbaijan to Turkey and Europe.
- These pipelines, such as the **Western Route Export oil pipeline, the Trans-Anatolian gas pipeline, the South Caucasus gas pipeline, and the Baku-Tbilisi-Ceyhan oil pipeline**, have the capacity to transport a significant amount of oil and gas daily.
- Some of these pipelines are located in close proximity to the conflict-prone area, within approximately 16 kilometers of the border.



Role of India

- **Initial Support for Territorial Integrity:** At the outset of the Nagorno-Karabakh conflict in 1993, **India supported the principle of respecting territorial integrity**.
- **Shift Due to Azerbaijan-Pakistan Relations:** **Azerbaijan's disregard for India's territorial integrity in Jammu and Kashmir and support for Pakistan has led India to oppose Azerbaijan's territorial integrity** in response.
- **Support for Peaceful Solutions:** India has consistently backed efforts to find a peaceful resolution to the Armenia-Azerbaijani conflict, aligning itself with international diplomatic initiatives.
- **Supporting International Partners:** **India has supported Russia, the United States, and France in voting against Azerbaijani resolutions** related to the conflict, emphasizing the importance of international cooperation.
- **Trade Interests and the INSTC:** Azerbaijan is also a part of **the International North-South Transport Corridor (INSTC)**, which runs through Central Asia and links Russia with India.
 - Thus, peace in the region is of utmost importance for India and its trade relations with other Central Asian nations.

Mains PYQs

Q.1) A number of outside powers have entrenched themselves in Central Asia, which is a zone of interest to India. Discuss the implications, in this context, of India's joining the Ashgabat Agreement, 2018. **(UPSC GS2 2018)**

Prelims PYQs

Question: Which one of the following countries does not border the Caspian Sea? (UPSC CSE 2003)

- Armenia
- Azerbaijan
- Kazakhstan
- Turkmenistan

Answer: (a)

Explanation:

- Armenia is a landlocked country located in the Caucasus region between Asia and Europe.
- Countries bordering the Caspian Sea: Kazakhstan, Turkmenistan, Iran, Azerbaijan, and Russia.

Therefore, option (a) is the correct answer.

In A Limbo – Story Of The Mega Refinery Project India, Saudi Arabia Want To

Resuscitate #India_Saudi_Arabia_Relations

Priority: High



Primary Source: The Indian Express

Relevance: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests. Energy, Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.

Prepp Prelims Booster: West Coast Mega Refinery Project, India-Saudi ties

Prepp Mains Booster: Issues Related To India-Saudi Arabia Ties

Context

- Recently, India and Saudi Arabia decided to enhance efforts to implement the West Coast Mega Refinery project during the visit of the Saudi Crown Prince and Prime Minister Mohammed bin Salman's state visit to India.

**What is the West Coast Mega Refinery Project?**

- The project concerns the construction of **a mega oil refinery and petrochemicals facility with a 60-million-tonnes-per-annum (60 mtpa) capacity in the Konkan belt** in Maharashtra.
- The project was first proposed in 2015 by India's public sector refiners to build one of the world's largest refining complexes with the participation of Saudi Arabia, and the United Arab Emirates.
- The Maharashtra state government recommended **Barsu in Ratnagiri** district as the new site for the project after previous sites were opposed by locals over environmental concerns.

- IOC, BPCL, and HPCL have incorporated a joint venture — **Ratnagiri Refinery & Petrochemicals (RRPCL)** — to implement the project.
- The project was initially estimated to cost around ₹3 lakh crores.

Implementation

- Both countries supported the early implementation of the project in the form of **trilateral cooperation between Aramco, ADNOC (Abu Dhabi National Oil Company), and the Indian companies.**
- \$50 billion has already been earmarked for the implementation of the project.
- In April 2018, Aramco signed a preliminary agreement with the Indian Oil Corporation (IOC), Bharat Petroleum Corporation (BPCL), and Hindustan Petroleum Corporation (HPCL) to build the refinery.
 - In June 2018, ADNOC joined the project.
 - The foreign partners have so far not picked up any stake in RRPCL, and IOC continues to own 50% of the joint venture, while BPCL and HPCL have a 25% stake apiece.
- However, it is still unclear if and when the refinery is expected to be up and running.

What is the significance of the project?**Demand for petroleum products:**

- **India is the world's third-largest consumer of crude oil** with demand for petroleum fuels, products, and petrochemicals expected to grow substantially.
- India is a key driver of global oil demand and is predicted to overtake China as the largest driver of demand.

Global refining hub

- Indian refiners are planning to increase refining and petrochemicals capacity to meet the increasing demand.
- As part of its medium- to long-term refining capacity expansion strategy, **India aims to increase its refining capacity from 250 mtpa to 450 mtpa.**
- The West Coast project is the single **largest proposed greenfield refinery project in the country** and will help India become a global refining hub and enhance petroleum product and petrochemical exports.

For Saudi and UAE

- The project offers Aramco and ADNOC an opportunity to tap the Indian petroleum market, which is one of the largest and fastest growing in the world.

- The companies can increase diversification, expand their global footprint, mitigate risk in the form of investments in downstream petroleum segments, and reduce reliance on the upstream segment.
- Aramco and ADNOC are among the top suppliers to **India, which depends on imports to meet over 85% of its crude oil requirements.**
- It reflects the partnership between India, Saudi Arabia, and the UAE in the energy sector.

Why is the project stuck?

- In 2015, Maharashtra was awarded the project after strong competition with Gujarat, and Tamil Nadu.
- However, locals strongly opposed the project and refused to give up their land.
- **Environmental:** The project was estimated to require around 15,000 acres of land across 17 villages.
- The locals were concerned about the **pollution and damage** the region could suffer from the mega oil refinery, especially to the farmers of Alphonso mangos and cashews, and local fishermen.
- **Political:** The Konkan region is a significant part of Maharashtrian politics and the choice of site for the project was based on the political considerations of the parties in the region.
- **Support for the project:** Some locals have expressed their support for the project as it is likely to lead to the development of the region and the generation of employment opportunities.

Way forward

- The government-to-government level commitments regarding the project have enthused supporters.
- **In Maharashtra:** The government and oil companies should identify an alternative coastal site within Maharashtra.
- **Alternate state:** Another option would be to consider another western coastal state for the project, given the need for maritime proximity to West Asia on account of the participation of Aramco and ADNOC.
- **Splitting the refinery:** Another option is to split the proposed 60-mtpa refinery into three to four separate refineries of 15-20 mtpa each.
- So far, the proposal to establish one mega refinery has prevailed given that it is more scalable and efficient in comparison to multiple smaller units.

Conclusion

- Petroleum and petrochemical products will remain a critical industry despite the growth in electric mobility and renewable energy sectors.
- Therefore, India and its West Asian partners must take steps to implement the project efficiently and without delays.

UPSC Mains Practice Questions

Q.1) Do you think India will meet 50 percent of its energy needs from renewable energy by 2030? Justify your answer. How will the shift of subsidies from fossil fuels to renewables help achieve the above objective? Explain. **(UPSC GS3 2022)**

Q.2) Access to affordable, reliable, sustainable, and modern energy is the sine qua non to achieve Sustainable Development Goals. Comment on the progress made in India in this regard. **(UPSC GS3 2018)**

Q.3) Petroleum refineries are not necessarily located nearer to crude oil-producing areas, particularly in many of the developing countries. Explain its implications. **(UPSC GS1 2017)**

Prelims PYQs

Question: Recently with which country government did ONGC Mittal Energy Limited (OMEL) sign a joint-venture deal of \$6 billion dealing with infrastructure, refinery, and power? (UPSC CSE 2006)

- Colombia
- Venezuela
- Nigeria
- Saudi Arabia

Answer: (c)

Canada Needs To See India – Not Just The Diaspora
#Bilateral Relations #India_Canada_Relations

Priority: Medium 

Primary Source: Indian Express

Relevance: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Prepp Prelims Booster: India-Canada ties, What is five Eyes Alliance?

Prepp Mains Booster: Issues Related To India-Canada Ties, Five eyes Alliance

Context

- Recently, India and Canada expelled diplomats in the aftermath of the allegations raised by Canadian Prime Minister Justin Trudeau about the killing of Khalistani activist Hardeep Singh Nijjar.

- This article discusses the influence of the diaspora on Canadian foreign policy.

Canada-India relations over the years

- India and Canada have shared an up-and-down relationship over the last fifty years.
- During the Cold War, the two countries shared a positive relationship on the basis of their **shared commonwealth status and convergent views on multilateralism, global development, and the importance of the UN.**
- Bilateral ties became strained over Cold War crises in Korea, Hungary, and Vietnam and were worsened by **India's nuclear tests.**
- Ties improved in the 1980s as a consequence of the increased immigration from India to Canada.
- However, the lack of meaningful trade and security engagement between the two countries restricted the scope for bilateral diplomatic engagement.
- Although the two countries have made efforts to revive the relationship, friction in the relationship has emerged due to the influence of the Indian diaspora in Canada, who have expressed an antagonistic attitude towards India.
- **Common interests: Defending the international order, Balancing China's rise and the Indo-Pacific policy, and Cooperation on climate change, global health, misuse of digital technologies, regulating AI, and assistance to developing countries.**



Present stalemate

- The recent public allegations by Canadian PM Trudeau indicate a significant downturn in the relations between the two countries.
- Trudeau's allegations make reference to the **"rule of law"** but do not consider the implications of the actions undertaken by such separatists on the rule of law in India and Canada.
- India has also claimed that Khalistani separatists attempted to disregard the Indian lawmaking process through their involvement in the protests against the Indian farm laws.

To know more click the [link](#).

Influence of the diaspora

Economic

- Diaspora influences national economies by sending **remittances to family members in the home country, FDI, entrepreneurship, trade facilitation, and transfer of skills.**
- They can participate in **brain gain** by returning to India or influencing others through knowledge transfer, and social and economic capital formation.
- The size of a diaspora population is positively correlated to the magnitude of international trade between the two countries.

Foreign policy

- The Canadian government's foreign policy has been characterized by **support for immigrants and diaspora elements like the Khalistanis.**
- This has allowed diaspora elements to use Canadian soil for activities that threaten the interests and security of other countries.
- As a result, the **Canadian government has been unable to ring-fence its national security and foreign policy priorities from short-term electoral pressures.**

Challenge for India

- Indian foreign policy faces a major problem in realigning its approach towards the Indian diaspora in various countries.
- Previously, the foreign policy establishment had adopted a strategic view of most diaspora groups as key vectors of remittances, networks, and ideas in India and had increased engagement with them.
 - They have contributed to the advancement of India's strategic ties with the United States and fostered national projects like [Make in India](#) and [Digital India](#).
- However, there has been an increase in civil society protests centered around human rights violations during most of India's high-level diplomatic visits to Western nations.

Caste discrimination

- Caste discrimination is becoming a rising concern across universities, firms, and organizations in the West.
- The growing popularity of digital technologies has affected and amplified the political outlook, linguistic choices, and ideological affinity of the Indian diaspora.

Concerns associated with India's diaspora policy

- **Lack of Diaspora Policy:** Despite the significant socio-economic contributions of the Indian diaspora to the country's development, there is

currently no established policy in place for the diaspora.

- The lack of up-to-date information on the Indian diaspora with Indian embassies has affected the efficient implementation of welfare schemes.
- **Duplication of Grievance Redressal Portals:** There are numerous platforms for migrants such as the **e-Migrate** and the **Centralized Public Grievance Redressal and Monitoring System (CPGRAMS)**.
- However, this leads to a duplication of data and leads to delays in grievance redressal.
- **Worker Rehabilitation:** There is no effective policy for the rehabilitation of returning migrant workers.
- Such a scheme has to be implemented in order to ensure livelihood security for those who are unable to return abroad.
- **Skilling:** India faces a significant challenge in equipping its workers with the necessary skills that allow them to compete with labor markets in East Asia like Japan, Korea, and Taiwan.
- **NRI Marriages:** There have been numerous instances of women being abandoned in NRI marriages recently.
- However, the **Registration of Marriage of Non-Resident Indian Bill** from 2019 has not yet been enacted.
- The proposal to establish overseas centers to assist distressed NRI women has also not been implemented.
- **Discriminatory Practices:** The lingering racist, and colonial mindset among the countries of the West is another challenge faced by the Indian diaspora.

Khalistan

- The **Khalistan movement is a Sikh separatist movement** that aims to create a **homeland for the Sikhs by establishing a sovereign state, called Khalistan**.
- Khalistan means '**Land of the Khalsa**' in the Punjab region.
- The Partition of India and Pakistan on communal lines in 1947 resulted in some of the sacred sites like the Nankana Sahib and some Sikh people going to Pakistan.
- This resulted in a struggle for greater autonomy through the **Punjabi Suba Movement** for the creation of a Punjabi-speaking state.
- **States Reorganisation Commission Report (1955):** Rejected this demand, the state of Punjab was reorganized into Hindi-Hindu-

majority Himachal Pradesh and Haryana and Punjabi-Sikh-majority Punjab in 1966.

- **Anandpur Sahib Resolution (1973):** Demanded autonomy for the state of Punjab without demanding secession.
- In the early 1980s, the movement turned into a major separatist movement due to the perceived bias of the Union Government against Punjab over the **sharing of Ravi-Beas waters**.
- The movement took a violent turn through the extremist actions of **Jarnail Singh Bhindranwale** and his supporters.
- The Indian army undertook **Operation Blue Star** to flush out militants from the Golden Temple and neutralize Bhindranwale in 1984 and **Operation Black Thunder** in 1986 and 1988.
- These operations were described as desecration of the Golden Temple and galvanized the demand for Khalistan among the global Sikh community.
- The assassination of Indira Gandhi and the subsequent anti-Sikh riots and Sikh genocide further fuelled anti-India sentiment among the Sikhs and widespread terrorism in the state in the 1980s and 1990s through extremist groups like the **Khalistan Liberation Force, Khalistan Commando Force, Babbar Khalsa, etc.**
- At present, the Khalistan movement is dormant in India but there is significant support for the separatist movement among NRIs.

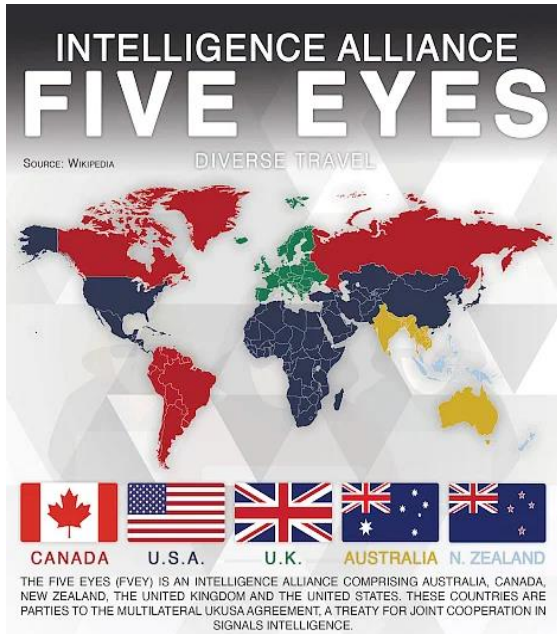
What is the Five Eyes alliance?

- The **Five Eyes alliance** is a comprehensive **security and intelligence partnership between the UK, the U.S.A., Canada, Australia, and New Zealand**.
- The phrase 'Five Eyes' was derived from the lengthy '**AUS/CAN/NZ/UK/Eyes Only**' **classification level**, which listed the 'eyes' who may have access to high-profile files and information.

Why was it formed?

- The origins of the Alliance can be traced back to the Second World War when the U.S.A. and the U.K. shared intelligence.
- The **Britain-USA (BRUSA) agreement in 1943 for intelligence sharing** laid the foundations for the **UK-USA (UKUSA) agreement**.
- **In 1949, Canada joined the alliance followed by New Zealand and Australia in 1956.**

- The alliance was strengthened after the 9/11 attacks with increasing monitoring of internet communications.
- The alliance was not officially acknowledged by member countries until the UKUSA files were released in 2010.



How does the Five Eyes Alliance work?

- The alliance **facilitates intelligence sharing, security cooperation, and mutual support** among its member countries.
- There has been a closer alignment among the members of the Five Eyes on account of the shared interests such as **countering the rise of China**.
- Other factors that have enabled cooperation among the nations are **mutual trust, shared language, and long historical partnership**.

Functions:

- **Maritime domain:** It monitors shipping traffic in strategic maritime areas
- **Aerospace domain:** It covers activities like ballistic missile tests, foreign satellite deployments, and military activities of relevant air forces.
- **Problematic regimes:** Terrorist organizations and weapons deals made by 'problematic regimes' are also covered by the FVEY.
- **Roles:** Each alliance member is in charge of collecting and analyzing information in certain parts of the world.
 - **UK:** Europe, Western Russia, the Middle East, and Hong Kong.
 - **USA:** The Middle East, China, Russia, Africa, and the Caribbean.
 - **Australia:** South and East Asia

- **New Zealand:** South Pacific and Southeast Asia.
- **Canada:** Russia, China, and Latin America.
- **Five Eyes Intelligence Oversight and Review Council:** It was established in 2016 to enhance coordination and collaboration among member countries' intelligence oversight and review entities.
 - It includes the non-political intelligence oversight, review, and security entities of the Five Eyes countries.
 - They exchange views of mutual interest, share best practices, and conduct virtual and in-person summits throughout the year.

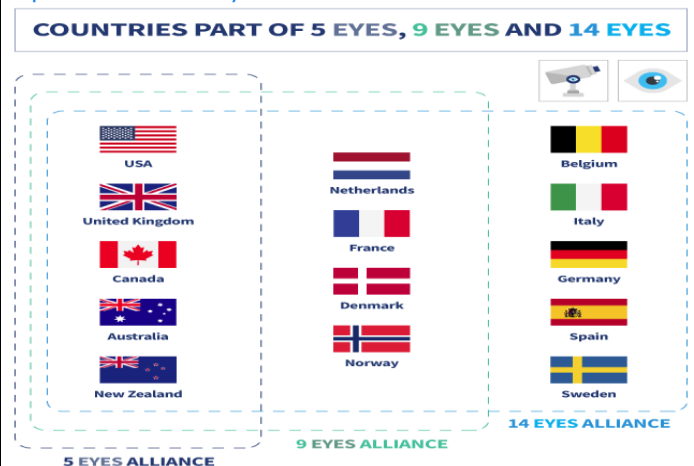
Significant work done

- During the Cold War, a **surveillance system code-named ECHELON** was developed to intercept and monitor communications of the Soviet Union and the **Warsaw Pact** members.
- During the Vietnam War, Australia and New Zealand supported the U.S.A. in monitoring North Vietnamese air defense networks.

Challenges faced by the Five Eyes alliance

- There has been a **lack of uniformity in the foreign policy** of the member nations despite their close ties.
 - For example, New Zealand has not issued an outright condemnation of Chinese actions in Hong Kong and Xinjiang, unlike the other four countries.
 - This has been attributed to the strong trade ties between China and New Zealand.
- The US has also attempted to exert its influence on issues like security with similar-minded countries through other groupings.
 - E.g.: The **Quadrilateral Security Dialogue (QUAD)** of Japan, Australia, India, and the U.S.A. and the **AUKUS** grouping of Australia, the UK, and the U.S.

Expansion of Five Eyes



Conclusion

- India must exercise caution in engaging with the Indian diaspora in order to serve Indian interests as some such groups have been actively working against India's national interests.

Mains PYQ

Q.1) Indian diaspora has scaled new heights in the West. Describe its economic and political benefits for India. **(UPSC GS2 2023)**

Q.2) The Indian diaspora has a decisive role to play in the politics and economy of America and European countries. Comment with examples. **(UPSC GS 2020)**

Q.3) The expansion and strengthening of NATO and a stronger US-Europe strategic partnership works well for India.' What is your opinion about this statement? Give reasons and examples to support your answer. **(UPSC GS2 2023)**

Art & Culture (GS Paper Prelims) & GS Paper I(Main)

Santiniketan And Three Hoysala Temples Declared World Heritage Sites #UNESCO's List of Cultural Heritage in India

Priority: High



Primary Source: The Hindu

Relevance: Indian Heritage and Culture,

Prepp Prelims Booster: Santiniketan, Hoysala Temples, UNESCO World Heritage List

Prepp Mains Booster: Sacred Ensembles of Hoysala, Significance of World Heritage Sites Designation

Context

UNESCO recently added two sites to its World Heritage List: **Santiniketan** in West Bengal and **The Sacred Ensembles of the Hoysala in Karnataka**. These additions bring India's total count to **42 World Heritage Sites**, placing it in the **sixth position globally**.



Santiniketan

- A Cultural and Educational Oasis Santiniketan, situated in West Bengal's **Birbhum District**, is a renowned cultural and heritage site established in **1901** by the legendary **Rabindranath Tagore**.
- Initially, it started as an ashram, founded by

Rabindranath Tagore's father, **Debendranath Tagore**. Over time, it evolved into a center for art, culture, and learning, now recognized as 'Visva Bharati.'

Here's what makes Santiniketan special:

- Santiniketan is renowned for its **unique educational philosophy, emphasizing the integration of nature, creativity, and holistic learning**.
- It features **open-air classrooms** where students connect closely with nature. The site boasts magnificent art created by luminaries like **Rabindranath Tagore, Nandalal Bose, and Ramkinkar Baij**.
- This place holds historical significance due to its association with **Nobel Laureate Rabindranath Tagore**.
- Additionally, Santiniketan is the **second UNESCO-recognized cultural treasure** in West Bengal, and its architectural approach embraces pan-Asian modernity, departing from colonial norms.

Sacred Ensembles of the Hoysala:



- The Sacred Ensembles of the Hoysala, comprising the
- Hoysala temples of **Belur, Halebid, and Somnathapura**, represent an architectural marvel dating back to the 12th and 13th centuries. The Hoysala temples are known for their Unique characteristics:
 - Hybrid Architecture:** The Hoysala temples exhibit A hybrid architectural style, somewhere Between **Dravidian and Nagara**, along with influences **from central India, northern and western India, and Karnataka Dravida**.
 - Intricate Carvings:** These temples are easily distinguishable by their intricate carvings and distinctive **star-shaped ground plans**. More than 240 wall sculptures adorn the **Hoysaleswara Temple in Halebidu**.
 - Sacrificial Offerings:** The three Hoysala temples

At **Belur, Halebid, and Somnathapura** were Consecrated for the deities **Vishnu, Shiva, and other forms of Vishnu**, representing an era of religious diversity.

Significance of World Heritage Sites Designation

- When a site is listed on the World Heritage List, it signifies global recognition of its exceptional cultural or natural importance.
- This recognition fosters awareness, appreciation, and preservation efforts. Nations receiving this designation may access financial support and expert guidance from **UNESCO** strengthening conservation efforts.

List of UNESCO World Heritage Sites in India:

	Name of Sites	Year	Location
1	Ajanta Caves	1983	Maharashtra
2	Ellora Caves	1983	Maharashtra
3	Agra Fort	1983	Agra
4	Taj Mahal	1983	Agra
5	Sun Temple	1984	Orissa
6	Mahabalipuram Monuments	1984	Tamil Nadu
7	Kaziranga National Park	1985	Assam
8	Keoladeo National Park	1985	Rajasthan
9	Manas Wildlife Sanctuary	1985	Assam
10	Churches and Convents of Goa	1986	Goa
11	Monuments of Khajuraho	1986	Madhya Pradesh
12	Monuments of Hampi	1986	Karnataka
13	Fatehpur Sikri	1986	Agra
14	Elephanta Caves	1987	Maharashtra
15	Great Living Chola Temples	1987	Tamil Nadu
16	Pattadakal Monuments	1987	Karnataka
17	Sundarbans National Park	1987	West Bengal
18	Nanda Devi & Valley of Flowers National Park	1988	Uttarakhand

19	Monuments of Buddha	1989	Sanchi, Madhya Pradesh
20	Humayun's Tomb	1993	Delhi
21	Qutub Minar	1993	Delhi
22	Mountain Railways of Darjeeling, Kalka Shimla & Nilgiri	1999	Darjeeling
23	Mahabodhi Temple	2002	Bihar
24	Bhimbetka Rock Shelters	2003	Madhya Pradesh
25	Chhatrapati Shivaji Terminus	2004	Maharashtra
26	ChampanerPavagadh Archaeological Park	2004	Gujarat
27	Red Fort	2007	Delhi
28	Jantar Mantar	2010	Delhi
29	Western Ghats	2012	Karnataka, Kerala, Tamil Nadu, Maharashtra
30	Hill Forts	2013	Rajasthan
31	Rani Ki Vav (The Queen's Stepwell)	2014	Gujarat
32	Great Himalayan National Park	2014	Himachal Pradesh
33	Nalanda	2016	Bihar
34	Khangchendzonga National Park	2016	Sikkim
35	Architectural Work Of Le Corbusier (Capitol Complex)	2016	Chandigarh
36	The Historic City	2017	Ahmedabad
37	Victorian Gothic and Art Deco Ensembles	2018	Mumbai
38	The Pink City	2019	Jaipur

39	Kakatiya Rudreshwara (Ramappa) Temple	2021	Telangana
40	Dholavira	2021	Gujarat
41	Santiniketan	2023	West Bengal
42	Sacred Ensembles of Hoysalas	2023	Karnataka

Genocide Memorials in Rwanda added to World Heritage List

- UNESCO has also recognized the historical significance of **four memorials in Rwanda that commemorate the 1994 genocide**.
- These sites, **namely Nyamata, Murambi, Gisozi, and Bisesero**, have been added to the prestigious **UNESCO World Heritage list** in recognition of their role in preserving the memory of the mass killings that took place during that tragic period.
- The four sites in Rwanda commemorate the genocide that targeted the **Tutsi minority** in large part but also moderate Hutus who were shot, beaten or hacked to death by **Hutu rebels** between April and July of 1994.

Adi Shankaracharya statue unveiled at Omkareshwar #Bhakti_Saints

Priority: High 

Primary Source: The Indian Express

Relevance: Indian Culture and Heritage

Prepp Prelims Booster: Chief Election Commissioner and other Election Commissioners (Appointment, Conditions of Service and Term of Office) Bill, 2023

Prepp Mains Booster: Salient aspects of Art Forms, literature and Architecture; Contributions of moral thinkers and philosophers from India and world

Context

- Recently, Madhya Pradesh Chief Minister inaugurated the 108-foot-tall '**Statue of Oneness**' (Ekatmata Ki Pratima) of **Adi Shankaracharya at Omkareshwar** on September 21, 2023.
- The statue depicts **Shankaracharya as a 12-year-old child** when he is said to have visited Omkareshwar.

Who was Adi Shakaracharya?



- **Adi Shankaracharya** was an Indian philosopher and saint, who is believed to have lived between **788 and 820 AD**, and was born in **Kerala's Kaladi**, situated on the bank of the **Periyar River**.
- He became a sanyasi at an early age and left his Brahmin household, where he is said to have made his way to **Omkareshwar**.
- Here, he studied under his guru **Govinda Bhagavatpada** and soon became a proponent of **Advaita Vedanta**, challenging prevailing philosophical traditions – including **Buddhism and Jainism**.
- Major literature works of Adi Shakaracharya:
 - **commentaries on the Brahma-sutra**
 - **the principal Upanishads**
 - **The Upadeshasahasri**
 - **Vivekachudamani**
 - **Maneesha Panchakam**
 - **Saundaryalahiri**
- Shankara is said to have founded four **Maths (monasteries)**, at **Shringeri (south)**, **Puri (east)**, **Dvaraka (west)**, and **Badarinatha (north)**.

What is Adi Shakaracharya's Philosophy?

- He was a proponent of **Advaita-vaad/ Advaita Vedanta/ Non dualism**.
- It recognizes a unity in multiplicity, identity between individual and pure consciousness, and the experienced world as having no existence apart from Brahman, which is the reality of all things.
- Post-Shankara Advaita Vedanta rests on four foundational principles: **(i) the illusoriness of jīvatva, individuality; (ii) a two-level reality; (iii) ajñāna as the conjoint cause of the world; and (iv) the non-duality of Consciousness**.
- He also gave the concept of **Nirgunabrahman** (god without attributes).
- Among his most famous lines are '**Brahma Satyam Jagat Mithya Jivo Brahmatra Naparaha**,' which means "**The Absolute Spirit is the reality, the world of appearance is Maya**,"

and '**Ekameva Adviteeyam Brahma**,' which means "The absolute is one alone, not two."

More About the Statue and other development projects

- The Adi Shankaracharya statue is multi-metal (made of bronze that contains 88% copper, 4% zinc and 8% tin and its internal structure is made up of high-quality steel) and installed at **Mandhata Parvat hill, facing southwards towards the Narmada River.**
- At the base of the statue is the **Shankar Stambh**, which features wooden domes and stone pillars with "**carvings depicting 32 stories related to Acharya Shankar.**"

Other Development projects along with the statue:

- The statue will be accompanied by **Ekatma Dham**, which will include the **Advaita Lok Museum**, built to "showcase the life and philosophy of Acharya Shankar through exhibits reflecting the message of Advaita Vedanta.
- The **Acharya Shankar International Institute of Advaita Vedanta** is being built to "**promote the study and understanding of Advaita Vedanta**".
- The research centres include the Centres for Advaita Philosophy, which will be featured.
- The **Maharshi Vedavyasa Advaita Library** will also be built.

Why is Mandhata island considered an Important religious destination?

- The **Mandhata island**, nestled on the **Narmada River**, is home to two of the **12 Jyotirlingas – Omkareshwara (located on the south side of the island) and Amareshwara**. The area is close to **Mahakaleshwara Jyotirlinga at Ujjain**, located 110 km to the northwest.

Ethics, Integrity & Aptitude GS Paper
IV(Main)

Climate Change Ethics #Environmental_Ethics
#International Ethics

Priority: Medium



Primary Source: Indian Express, TH. DTE

Relevance: Environmental Ethics

Prepp Mains Booster: Environmental & International Ethics

Context:

Climate change is a global crisis with profound ethical dimensions. This article explores the ethical dilemmas presented by climate change, focusing on how it violates human rights, exacerbates inequalities, and poses challenges that require a global response.

1. Violation of Human Rights:

Issue: Climate change threatens fundamental human rights, including the right to life, health, food, water, and shelter.

Example: Rising sea levels displace vulnerable communities, leading to loss of homes and access to clean water and food, particularly affecting low-income and indigenous populations.

2. Exacerbation of Inequalities:

Issue: Climate change disproportionately affects marginalized communities, exacerbating existing inequalities.

Example: Small island developing states face increased risks of inundation and extreme weather events, which can displace their populations and disrupt their economies, leading to further poverty and hardship.

3. Global Interconnectedness:

Issue: Climate change exemplifies the global interconnectedness of environmental problems and their ethical dimensions.

Example: Emissions from one region impact the climate worldwide, affecting people and ecosystems far beyond the source of emissions, making it a shared ethical responsibility to address the issue.

4. Intergenerational Ethics:

Issue: Climate change raises questions about the ethical responsibility of current generations toward future ones.

Example: The excessive use of fossil fuels by past generations has led to the current climate crisis, with long-lasting consequences that future generations must bear, underscoring an ethical obligation to mitigate climate change.

5. Moral Threshold:

Issue: Establishing a moral threshold to protect human rights amidst climate change challenges.

Example: The "No Harm Principle" suggests that acting on climate change is a moral imperative, regardless of the uncertainties about future impacts, emphasizing the importance of proactive measures.

6. Temporal Discounting:

Issue: Ethical considerations related to discount rates in economic analyses of climate change.

Example: High discount rates may prioritize current interests over future generations, while low or zero discount rates acknowledge the value of benefits to both current and future populations.

7. Climate Denialism:

Issue: Climate change denialism and its ethical dimensions. It often arises from political ideologies and values that impact how people process new information. The perception of climate change and climate denialism can be influenced by individual

beliefs, attitudes, and prior experiences.

Understanding the moral foundations that underpin these beliefs is essential for addressing climate denialism effectively.

Example: Denialism, often fueled by political ideologies, hinders effective climate action and reflects the challenge of aligning diverse values and beliefs to address the crisis.

8. Human Rights-Based Approach:

Issue: The need to adopt a human rights-based approach to climate change.

Example: Recognizing the link between climate change and human rights obliges states, corporations, and individuals to take action to protect these rights, emphasizing the ethical imperative of addressing climate change.

Conclusion:

- Climate change is a global crisis with profound ethical dimensions.
- It not only violates fundamental human rights and exacerbates inequalities but also challenges societies to address interconnected global issues, consider the interests of future generations, and overcome moral dilemmas related to economic analyses and climate denialism.
- Embracing a human rights-based approach is essential to ensure that ethical principles guide our actions and policies in mitigating climate change's impacts on vulnerable populations and future generations.

Q: What is meant by 'environmental ethics'? Why is it important to study? Discuss any one environmental issue from the viewpoint of environmental ethics. (2015)

Places in News

India

Mana Village

- Akashvani Delhi celebrated the successful end of India's G20 presidency and the "Meri Maati Mera Desh" initiative with a grand cultural festival in Mana Village, Chamoli District, Uttarakhand.
- Mana is a village in Chamoli District, Uttarakhand, that shares a border with China. It was once known as the "last village" in India, but is now referred to as the "first Indian village."
- Mana is located on the banks of the Saraswati River, just 3 kilometers from the town of Badrinath, making it one of the most popular tourist destinations in the region.

WIDER ROAD TO CHINA BORDER IN UTTARAKHAND



Siang River



- India is planning to build a large barrage on the Siang River to protect it from a Chinese dam being built in Tibet.
- The dam is being built on the Yarlung Tsangpo River in Tibet's Medog district.
- The Tsangpo, which originates in China, is called the Siang after it enters India through Upper Siang district in the north eastern state. The Siang joins two other rivers – the Lohit and the Dibang – downstream to form the Brahmaputra.

Umiam Lake



- Meghalaya government is planning to use an AI-powered robotic boat to clean the scenic Umiam lake that is being ravaged by plastic waste.
- Umiam Lake, also known as Barapani Lake, is a lake in the state of Meghalaya 15 km (9.3 miles) north of Shillong, the capital of Meghalaya.
- It is encircled by lush green East Khasi hills. It is one of the biggest artificial lakes in Meghalaya, spread over an area of 10 square km.

Kamlang Tiger Reserve

PROTECTED AREAS OF ARUNACHAL PRADESH



- Around 20 different butterfly species were recently identified and recorded during a 'Butterfly walk & nature trail' organized by the Kamlang Tiger Reserve.
- Kamlang Tiger Reserve: It is located in the southeastern part of Lohit District in Arunachal Pradesh near the border with Myanmar.
- It is named after the Kamlang River, which flows through the reserve and joins the Brahmaputra.

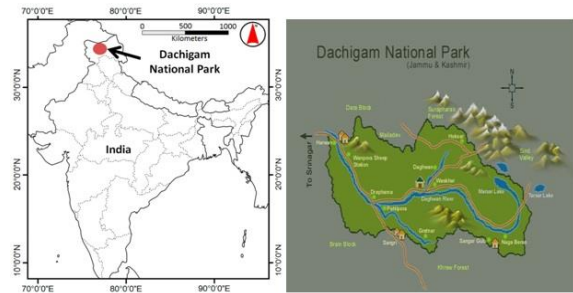
Vizhinjam International Seaport

- Reason to be in news: The docking of the first ship at the Vizhinjam International Seaport has been deferred recently.
- Vizhinjam International Seaport is located at Vizhinjam, a coastal town in Thiruvananthapuram District, Kerala.
- It is designed primarily to cater to container transshipment besides multi-purpose and break bulk cargo.



Dachigam National Park

- The Union Ministry of Forests, Environment & Climate Change recently unveiled the draft notification for an eco-sensitive zone around Dachigam national park.
- Dachigam National Park is located 22 km (kilometers) from Srinagar in Jammu and Kashmir.
- It was initially established to ensure the supply of clean drinking water to Srinagar city.



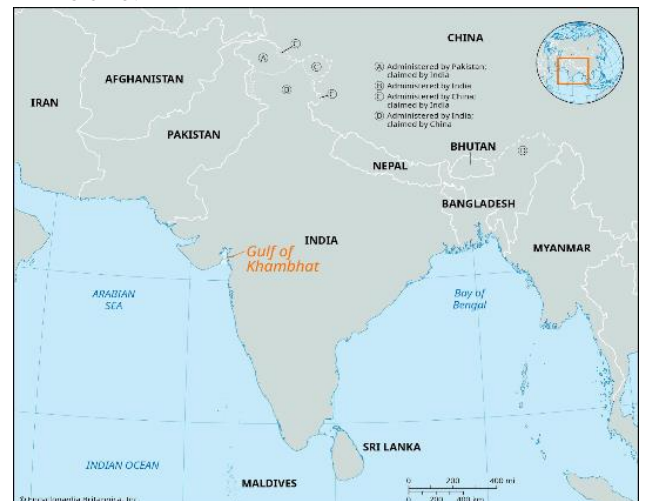
Kole Wetland

- Kole wetlands, an internationally important Ramsar site of high value biodiversity, has been facing the threat of alien invasive species. Kole wetlands is the largest brackish, humid tropical wetland ecosystem located in the state of Kerala.
- Extending from the northern bank of Chalakudy River in the south to the southern bank of Bharathapuzha River in the north it is situated in the central Asian Flyway of migratory birds.



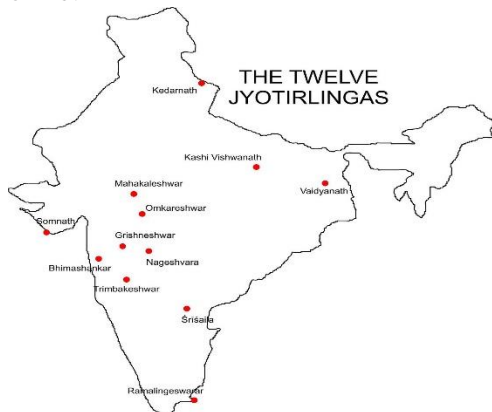
Gulf of Khambhat

- Vanadium, a critical raw material for many industrial applications, has been found in sediment samples collected from the Gulf of Khambhat.
- It is historically known as the Gulf of Cambay, is a bay on the Arabian Sea coast of India, bordering the state of Gujarat just north of Mumbai and Diu Island.



Omkareshwar

- Madhya Pradesh's Chief Minister S unveiled the 108-foot-tall 'Statue of Oneness' of Adi Shankaracharya at Omkareshwar on September 21.
- Omkareshwar is a Hindu temple dedicated to Shiva, located in Mandhata, nearby Khandwa city in Khandwa district of the Indian state of Madhya Pradesh.
- It is one of the 12 revered Jyotirlinga shrines of Shiva.



Kongthong Valley

- On the occasion of World Tourism Day 2023, Kongthong Village in the East Khasi Hills district achieved a remarkable milestone by winning the prestigious title of "Best Tourism Village 2023" at the esteemed National Tourism Awards.
- Kongthong Village of Khat-ar shnong also known as the Whistling Village of India, has been a shining beacon in the tourism sector. In an era when people generally communicate through mobile phones, video chats, and text messages, the people of Kongthong communicate among themselves through whistling and using different musical tunes to call each other.

World

Murmansk Fort

- In 2023, almost 35% of the 8 million tonnes of cargo handled by Murmansk port in northwest Russia was for India.
- The Murmansk seaport is one of the largest ice-free ports in Russia and is situated in Murmansk, the largest Russian city north of the Arctic Circle.
- It was established in 1916 as a supply point for the Russian military during World War I.
- It is located on the Kola Peninsula on the coast of the Barents Sea, around 2,000 km northwest of Moscow.



Lampedusa Island

- European Commission President Ursula von der Leyen recently visited the Italian island of Lampedusa, which is struggling with a surge in migrant arrivals.
- Lampedusa, which is closer to North Africa than the Italian mainland, has long been targeted by people smugglers.
- Lampedusa is one of the Pelagie Islands, in the Mediterranean Sea, southern Italy.
- It is located approximately 205 km southwest of Sicily, 113 km east of Tunisia, and about 176 km north of Libya.
- It is part of the Sicilian region of Italy and is situated in the southern Mediterranean Sea.



Gabon

- Recently, Military officers of the Central African nation Gabon announced that they had taken power "on behalf of the Gabonese people" and that they were "putting an end to the current regime".
- Gabon is a country on the Atlantic coast of West Central Africa.
- Located on the equator, it is bordered by Equatorial Guinea to the northwest, Cameroon to the north, the Republic of the Congo on the east and south, and the Gulf of Guinea to the west.



South China Sea

- Recently, the Philippines Coast Guard claimed that Chinese vessels had interfered with a resupply mission to a remote military outpost in the South China Sea.
- The South China Sea is an area of contention between China and the Philippines with China claiming the entirety of the sea.
- The South China Sea is an arm of the Western Pacific Ocean in Southeast Asia.
- It is bordered by the People's Republic of China, the Republic of China (Taiwan), the Philippines, Malaysia, Brunei, Indonesia, Singapore and Vietnam.
- It is connected to the East China Sea by the Taiwan Strait and to the Philippine Sea by the Luzon Strait.



Saudi Arabia

- Recently, Prime Minister Narendra Modi launched the India-Middle East-Europe Economic Corridor at the G-20 Summit in New Delhi.
- PM Modi stated that Saudi Arabia is one of India's most important strategic partners. Saudi Arabia is a country in West Asia.

- It is bordered by the Red Sea to the west; Jordan, Iraq, and Kuwait to the north;
- the Persian Gulf, Qatar and the United Arab Emirates to the east; Oman to the southeast; and Yemen to the south.



Morocco

- Recently, a 6.8 magnitude earthquake occurred in the northern part of Morocco on September 8th, 2023 causing around 3000 deaths.
- Morocco is a hilly country in northwestern Africa with Rabat as its capital.
- It is bounded to the east and southeast by Algeria, to the south by the Western Sahara, to the west by the Atlantic Ocean, and to the north by the Mediterranean Sea.
- It is the only African country with coastlines on both the Atlantic and Mediterranean seas.



Libya

- Recently, flooding caused by Storm Daniel resulted in the collapse of two dams and four bridges and the death of around 5,000 people in Derna in eastern Libya.
- Libya is located in the Maghreb region of North Africa with its capital at Tripoli.

- It is predominantly desert and oil-rich, making it the largest oil reserve in Africa and one of the largest oil producers in the world.
- Libya is bound to the north by the Mediterranean Sea, the west by Tunisia and Algeria, the southwest by Niger, the south by Chad, the southeast by Sudan, and the east by Egypt.



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Nagorno-Karabakh

- Recently, the Azerbaijan Defense Ministry began an “anti-terrorist” operation against Armenian positions in Nagorno-Karabakh leading to at least three deaths.
- Nagorno-Karabakh is a landlocked, hilly, and wooded territory of Azerbaijan.
- It is also known as Artsakh in Armenian.
- The region with a population of around 150,000 people is primarily ethnically Armenian, with a small Azeri minority.
- It is located in the South Caucasus area covering the southern Caucasus mountains and consists primarily of modern-day Armenia, Azerbaijan, and Georgia.

