

Today's Prelims Topics

As rupee hits low REER soars to an all time high

Context

Despite depreciating against the US dollar, the rupee's Real Effective Exchange Rate index reached a record high of 108.14 in November 2024, indicating its appreciation in 'real effective' terms.

Factors Contributing to the Current Scenario

- **Global Dollar Strengthening:** The dollar has appreciated due to:
 - US policies favoring tariff hikes on imports, tax cuts, and other inflationary measures.
 - Increased US bond yields attracting global capital.
- **Rupee Depreciation:** The rupee's nominal weakening against the dollar is partly due to capital outflows and higher domestic inflation compared to major trading partners.

About Effective Exchange Rate (EER)

- EER is a measure of a country's currency value relative to a weighted average of several foreign currencies.
- It is an index of the weighted average of the **rupee's exchange rates vis-à-vis the currencies of India's major trading partners.**
- The currency weights are derived from the share of the individual countries to India's total foreign trade

EER is of 2 types: NEER & REER

- **Nominal Effective Exchange Rate (NEER):**
 - It measures the rupee's value against a basket of global currencies without adjusting for inflation.
 - The Reserve Bank of India has constructed NEER indices for 2 baskets: one with **6 currencies (US dollar, Euro, Chinese yuan, Pound, Yen, and Hong Kong dollar)** and another with 40 currencies.
 - The NEER indices are with reference to a base year value of **100 for 2015-16.**
 - Increases in NEER indicate the rupee's effective appreciation (**making imports cheaper but exports less competitive**), while decreases signify depreciation (**boosting export competitiveness but making imports more expensive**).
- **Real Effective Exchange Rate (REER):**
 - Adjusts NEER for inflation differentials between India and its trading partners.
 - REER above 100 denotes that the home currency is overvalued and more expensive compared to its competitors.
 - Any increase in **REER means that the costs of products being exported from India are rising more than the prices of imports into the country. It results in a loss of trade competitiveness** (Harmful in long run).

UPSC PYQ

Q. With reference to the Indian economy, consider the following statements: **(2022)**

1. An increase in Nominal Effective Exchange Rate (NEER) indicates the appreciation of rupee.
2. An increase in the Real Effective Exchange Rate (REER) indicates an improvement in trade competitiveness.
3. An increasing trend in domestic inflation relative to inflation in other countries is likely to cause an increasing divergence between NEER and REER.

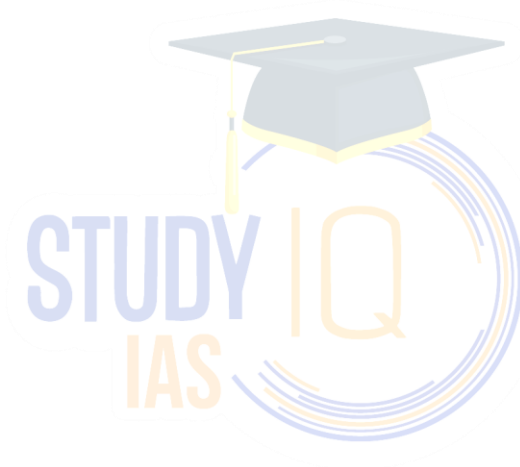
Which of the above statements are correct?

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

Answer: C

Source:

- [Indian Express - As rupee hits low REER soars to an all time high](#)



India-Myanmar border Free Movement Regime

Context

The Union Home Ministry has brought in fresh protocol to regulate the movement of people living within 10 km on either side of the border between India and Myanmar.

About Free Movement Regime (FMR) with Myanmar

- FMR is a bilateral agreement between India and Myanmar established in **1968**, allowing residents within a certain distance of the border to cross freely due to familial and ethnic ties.
 - The **Mizo, Kuki and Chins**, collectively known as **Zo people** (on either side of the border) share a common ancestry and strong ethnic ties.
- Indian & Myanmar share a boundary of **1643 Km. (largely unfenced)** which passes through **4 Indian States - Arunachal Pradesh, Nagaland, Manipur and Mizoram**
- **Current Developments**
 - **Suspension of FMR:** Union Home Minister in **February 2023**, announced that the FMR has been suspended to ensure internal security and maintain the demographic structure of northeastern States.
 - **Pending Notification:** The formal notification to end the FMR, which requires approval by the Ministry of External Affairs, is still awaited.
 - Recently the Ministry of Home Affairs has brought **new guidelines to regulate the movement of people.**
- **Concerns Related to FMR:**
 - **Security Risks:** Unrestricted movement exploited by insurgents and terrorists to cross the border undetected.
 - **Illegal Activities:** smuggling goods, drug trafficking and arms across the border.
 - **Challenges in Monitoring:** Free movement makes it difficult for border security forces to monitor and differentiate between regular community members and those engaging in illegal activities.



New Guidelines for Cross-Border Movement

- **Range Reduction:** The territorial limit for free movement has been reduced to **10 km**.
- **Border Pass System:** Residents crossing the border will need to obtain a **border pass** issued by the **Assam Rifles (Primary guarding force)**. The pass will permit a stay of up to **7 days** in Myanmar.
- **Processes for Entry into India:**
 - **Visitors must:** Report to designated border points, Fill a form and Undergo document checks, security screening and health inspections.
 - Information will be uploaded to the **Indo-Myanmar Border Portal**.
 - A border pass with a photograph and QR code will be issued and must be returned at the same point upon departure.

Source:

- [The Hindu - Centre yet to formally scrap FMR](#)

Centenary year celebration of Belagavi Session

Context

The Indian National Congress (INC) is holding a special event in Belagavi (formerly Belgaum), Karnataka to mark **100 years of Belagavi Session 1924**.

About 1924 Belgaum Congress Session

- It was the **39th Session** of the INC and was the **only session presided over by Mahatma Gandhi**.
- The session was attended by several senior Congress leaders including **Jawaharlal Nehru, Sardar Vallabhbhai Patel, Sarojini Naidu** and Khilafat movement leaders **Muhammad Ali and Shaukat Ali** and various others.
- **Significance:**
 - During this session, Gandhi presented his ideas on **non-violence & communal harmony**.
 - Mahatma Gandhi also discussed his dream of **'Swaraj' and 'Sarvodaya'**.
 - Held separate conferences against untouchability.
 - Strong resolutions were passed to stress upon Hindu-Muslim unity, paid social service and making khadi spinning mandatory.

Important Congress Sessions & their Presidents

- **1885: W.C. Banerjee** - Formation of Indian National Congress.
- **1888: George Yule** - First English President.
- **1905: Gopal Krishan Gokhale** - Formal proclamation of Swadeshi movement
- **1906: Dadabhai Naoroji** - Adopted four resolutions on: Swaraj (Self Government), Boycott Movement, Swadeshi & National Education
- **1907: Rash Bihari Ghosh** - Split in Congress- Moderates & Extremist.
- **1916: A.C. Majumdar** - Unity between two factions-Moderates and Extremists of Congress & Lucknow Pact signed between Congress and Muslim League.
- **1917: Annie Besant** - First Woman President of Congress
- **1925: Sarojini Naidu** - First Indian Woman President
- **1929: Jawahar Lal Nehru** - Passed the resolution on 'Poorna Swaraj.'
- **1931: Vallabhbhai Patel** - Resolutions on Fundamental Rights and National Economic Programme.

Source:

- [Indian Express - Congress prepares for Belagavi session](#)

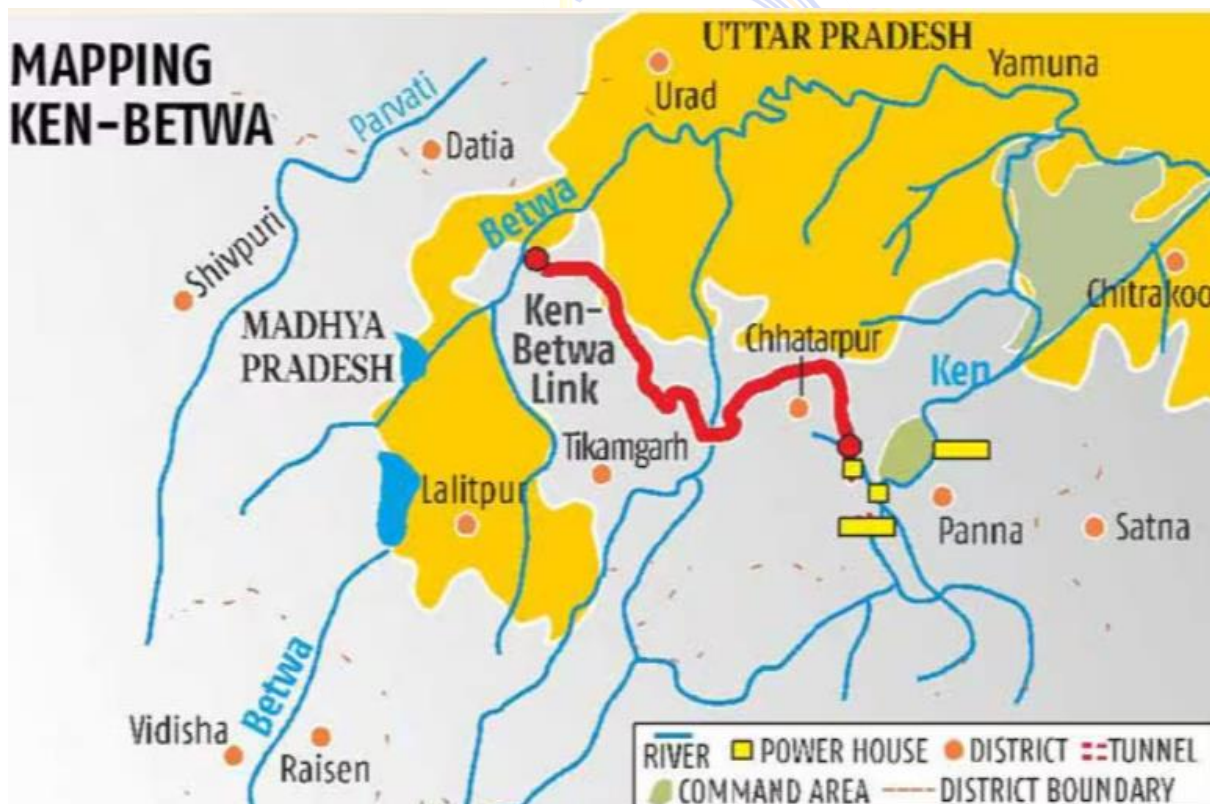
Ken-Betwa link Project

Context

Prime Minister Narendra Modi has laid the foundation stone for the Ken-Betwa river-linking project which is aimed at solving the water woes of the **Bundelkhand region**.

About Ken-Betwa link project (KBLP)

- KBLP aims to transfer excess water from the **Ken River to the Betwa River**, both tributaries of the **Yamuna**.
- It's the **first interlinking project** under the **National Perspective Plan (1980)**.
- **Components:**
 - **Ken-Betwa Link Canal:** 221 km in length (including a 2-km tunnel) for water diversion.
 - **Phase-I:** Construction of **Daudhan Dam**, related tunnels, canal, and powerhouses.
 - **Phase-II:** Building of **Lower Orr Dam, Bina Complex Project and Kotha Barrage**.
- **Benefits of the project:**
 - **Irrigation:** 10.62 lakh hectares (8.11 lakh ha in Madhya Pradesh; 2.51 lakh ha in Uttar Pradesh).
 - **Drinking Water:** 62 lakh people.
 - **Power Generation:** 103 MW hydropower, 27 MW solar power.
- **Ken River:** Originates near **Ahirkawan in Katni district (MP)** and travels a distance of **427 km**, before merging with the **Yamuna at Chilla village (Banda)** in Uttar Pradesh.
- **Betwa River:** Originates in the **Vindhya Range (near Hoshangabad, MP)**, and travels a distance of **590 km**, before merging with the **Yamuna at Hamirpur (UP)**.



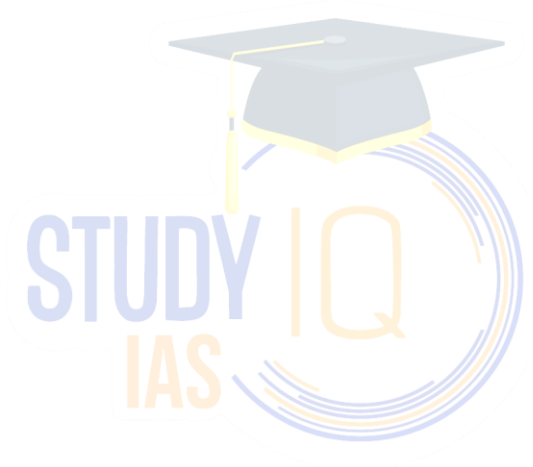
Environmental Impacts of the Project

- **Panna Tiger Reserve:** The project would submerge over **10% of the core area** of the tiger reserve (98 sq km).

- **Impact:** Undermines tiger reintroduction success (tigers went locally extinct in 2009, but populations recovered). **Large-scale deforestation: 2-3 million trees.**
- **Wildlife Threats:** It will also impact the **Gharial population in Ken Gharial Sanctuary.**
- **Rainfall Impact:** A study by IIT-Bombay scientists found that moving large quantities of water as part of river-linking projects can affect land-atmosphere interplay and feedback, leading to a **mean rainfall deficit of up to 12% in September.**

Source:

- [The Hindu - ₹45,000-cr. Ken-Betwa link project launched](#)



Why are activists opposing EC's election rule amendment?

Context

The Union Law Ministry has amended **Rule 93(2)(a)** of the **Conduct of Election Rules, 1961**. It restricts public access to certain election documents and electronic data. Opposition parties have filed a petition in the Supreme Court against the amendment.

About the Amendment

- **Conduct of Election Rules, 1961** are created under the **Representation of the People Act, 1951** to provide procedures for conducting elections.
- **Modification in Rule - 93:**
 - **Previous Rule 93:** Allowed public access to all “papers” related to elections.
 - **Amended Rule 93:** Limits access to only those documents explicitly mentioned in the rules, excluding electronic records like CCTV footage, webcasting clips and video recordings.
 - **Nomination forms, results and election account statements remain accessible.**
- **Exceptions to the Amendment:**
 - **Candidates' Access to Documents:** The amendment **does not restrict access** for **candidates** in elections. Candidates still have the right to access all election-related documents, including **CCTV footage** and other electronic records, for their constituencies.
 - **Public Access to Documents:** For the general public, access to electronic records like CCTV footage is **limited** and can now only be obtained through **court intervention**.
- **EC's Justification for the Amendment:**
 - **Privacy and Security Concerns:** The ECI argued that sharing CCTV footage publicly could compromise the **secrecy of the vote**, especially in **sensitive areas** like **Jammu and Kashmir** or **naxal-affected regions**, where voter safety could be at risk.
 - **Misuse of Data:** There were concerns that such footage could be manipulated using **artificial intelligence** to create misleading narratives, which could undermine the integrity of the election process.

Concerns

- **Right to Know:** Rule 93 functions as an **extension of the Right to Information Act** in elections. Activists have argued that restricting access infringes on citizens' right to scrutinize the electoral process.
- **Documents Not Specified in Rules:** Key documents (e.g., Presiding Officers' diaries detailing voter turnout and tokens distributed) are in ECI manuals and handbooks, not the official rules. The amendment potentially limits access to these critical documents.
- **Unilateral decision:** The Election Commission of India has taken the decision **unilaterally** without consulting stakeholders.

Source:

- [The Hindu - Why are activists opposing EC's election rule amendment?](#)

Quantum Computing

Context

Quantum computers, driven by principles of quantum mechanics like superposition and entanglement, promise computational breakthroughs that surpass classical systems. However, challenges such as high costs, error rates, and scalability continue to hinder their widespread adoption.

Basics of Quantum Computing

- **Classical computers:**
 - They work on the principles of **classical physics**. Their fundamental computing unit is the **bit**.
 - Each bit represents one piece of information with two possible values, 0 or 1. They use a **Binary system** to represent and process information.
- **Quantum Computers:**
 - Quantum computing utilises the unusual behaviour of **subatomic particles, like electrons or photons**, at the microscopic level.
 - It uses **quantum bits (qubits)**, which can exist in states 0, 1, or both simultaneously (a property called **superposition**).
 - **Superposition:** A qubit holds multiple values at once, enabling simultaneous computations. It allows quantum computers to process exponentially more data than classical computers.
 - **E.g.** A spinning coin represents both heads and tails until measured.
 - **Entanglement:** Qubits can be intrinsically linked, even over large distances. Measuring one qubit instantly reveals information about its entangled partner. Entanglement facilitates simultaneous information sharing which speeds up computations.
 - **E.g.** Two gloves in separate boxes, knowing one is left reveals the other is right.
- These principles allow quantum computers to perform computations much faster than classical computers.

Limitations of Quantum Computing

- **High Costs and Complexity:** Building and maintaining quantum computers is expensive and technologically challenging.
- **Error Rates and Stability:** Qubits are prone to errors due to environmental interactions (**decoherence**). Requires sophisticated **error correction** mechanisms to maintain superposition.
- **Scalability:** Practical applications, like drug discovery or solving astronomical mysteries, require millions of qubits, far beyond current capabilities.

National Quantum Mission

- **Launched:** In 2023
- **Nodal Ministry:** Department of Science & Technology
- **Objectives of the Mission:**
 - Develop quantum computers with 50-1000 qubits within eight years using superconducting and photonic technology.
 - Implement secure satellite-based quantum communications across ground stations over a 2000 km range within India.

UPSC PYQ

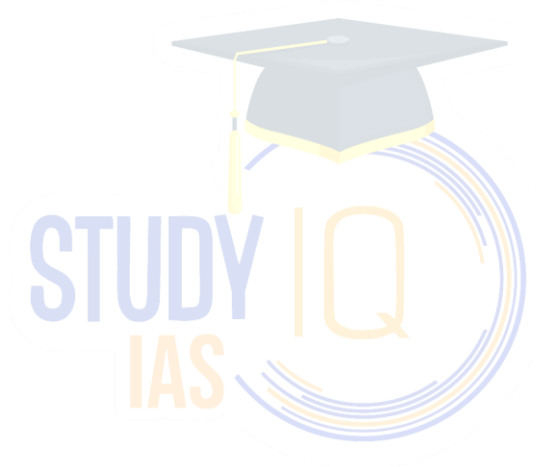
Q. Which one of the following is the context in which the term "qubit" is mentioned? **(2022)**

- (a) Cloud Services
- (b) Quantum Computing
- (c) Visible Light Communication Technologies
- (d) Wireless Communication Technologies

Answer: B

Source:

- [The Hindu - What is quantum computing?](#)



Maharashtra govt. releases compensation of ₹86 lakh to 39 rescued labourers

Context

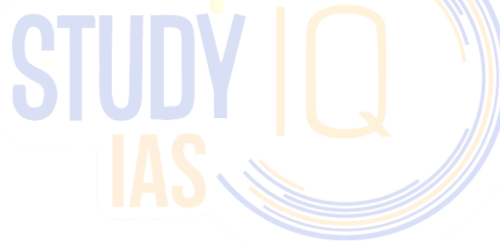
The Maharashtra government has released a compensation of ₹86 lakh to 39 people rescued from bonded labour in Ahilya Nagar (previously Ahmednagar) in 2023.

About Central Sector Scheme for Rehabilitation of Bonded Labourer (CRBL)

- CRBL is a scheme by the Government of India to eradicate bonded labor in India. It provides financial assistance and other support to rehabilitate rescued bonded laborers.
- It was first launched in **1978** & was last revamped in **2016**.
- **Nodal Ministry:** Ministry of Labour and Employment
- **Components:**
 - **Financial aid:** Rs. 1,00,000 for adult males, Rs. 2,00,000 for special categories (children, women, etc.) and Rs. 3,00,000 for extreme cases (e.g. sexual exploitation or trafficking).
 - **Non-cash assistance:** House-site allotment, land development, low-cost housing, animal husbandry support, wage employment, education and access to essential commodities.
- Funds are released through the Ministry of Labour and Employment to District National Child Labour Project Societies & District Project Societies.
- State Governments are responsible for creating **District Bonded Labour Rehabilitation Funds (minimum Rs. 10 lakhs) to provide immediate relief.**

Source:

- [The Hindu - compensation of ₹86 lakh to 39 rescued labourers](#)



Places in News

Paktika province

- Recently Pakistani Army carried out air strikes in Paktika Province of Afghanistan



- Location:** In eastern Afghanistan, on the border with Pakistan.
- Significance:** Paktika is a strategically important province due to its proximity to the **Durand Line**, which makes it easy for militants to cross between Afghanistan and Pakistan.
- Durand Line:** It is the international border between Afghanistan and Pakistan.

Source:

- [Indian Express - Pakistan Airstrikes in Afghanistan](#)

Kilauea Volcano

- Recently, Kilauea volcano erupted on Hawaii's Big Island.



- Location:** It is located along the southeastern shore of **Hawaii Island**.
- It is one of the **world's most active volcanoes**.
- Volcanic Eruption:** 99% of gas molecules emitted during a volcanic eruption are Water Vapor, CO₂ and SO₂.
- The remaining 1% is composed of small amounts of **hydrogen sulfide, carbon monoxide, hydrogen chloride, hydrogen fluoride** etc.

Source:

- [The Hindu - Big shot](#)

Lesotho

- India has sent a consignment of 1,000 metric tonnes of rice to Lesotho to assist in addressing the food security and nutritional needs of its people.



- **Location:** It is a landlocked country in Southern Africa. It is **completely surrounded by South Africa**, making it the largest sovereign enclave globally.
- It is situated in the **Maloti Mountains**.
- **River: Orange River (one of the longest rivers in Africa)** rises in the Lesotho Highlands as **Sinqu River**.

Source:

- [DD News- Batting for Global South](#)



Editorial Summary

The lapses in the Disaster Management Bill

Context

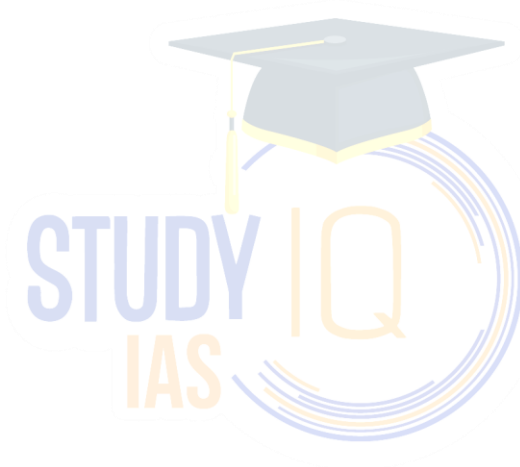
The Disaster Management (Amendment) Bill, 2024, has sparked concerns for failing to address gaps in the existing Disaster Management Act (DMA), 2005.

What are the Different Concerns?

- **Limited Focus on Local Communities:** The Bill uses top-down terminology such as ‘monitor’ and ‘guidelines’ rather than inclusive terms like ‘supervision’ and ‘direction.’
 - Global frameworks like the **Yokohama Strategy**, **Hyogo Framework for Action**, and **Sendai Framework for Disaster Risk Reduction** emphasize local communities as the ‘first responders.’
 - Examples of community-led responses:
 - Cyclone Aila (2009, Sundarbans): Villagers acted before official agencies arrived.
 - Kedarnath Glacial Lake Outburst Flood (2013): Locals conducted early rescue operations.
 - Kerala Floods (2018): Fisherfolk played a critical role in rescue efforts.
- **Lack of Intersectional Inclusivity:** The Bill fails to address intersectional discrimination, ignoring the vulnerabilities of women, disabled individuals, lower castes, and LGBTQIA+ communities.
 - Vulnerable groups often suffer layered discrimination during disasters but are overlooked in relief measures.
 - Data-informed approaches can transform how vulnerabilities are understood and addressed.
- **Weak Accountability Mechanisms:**
 - **Performance of District Authorities:** No provisions for evaluating the preparedness or performance of district authorities.
 - Failures in preparedness are often obscured by showcasing individual philanthropy, paving the way for political exploitation.
 - **Omission of Critical Provisions:**
 - **Sections 12 & 13** of the DMA (minimum standards of relief and loan repayment relief) have been removed.
 - **Section 19**, which mandated State governments to provide ex gratia assistance for widows, orphans, the homeless, and livelihood restoration, has been dropped.
 - These changes strip essential safeguards for disaster victims.
 - **Removal of Integration and Preparedness Clauses:**
 - **Section 35(2b):** Mandated integration of disaster management provisions into national plans.
 - **Section 35(2d):** Ensured preparedness across government departments.
 - **Subclauses 22(2a) & 22(2b):** Required State Executive Committees to conduct preparedness assessments.
- **Neglect of Animal Welfare:** Animals, often heavily affected during disasters, are not considered in the Bill.
 - District Disaster Management Authorities (DDMAs) lack responsibility to implement the **Animal Birth Control (ABC) Rules, 2023**, highlighting a significant gap.
- **Urban Disaster Management Authority (UDMA):** Section 41A proposes the establishment of UDMA but lacks clarity on its necessity or scope.

- Municipal Corporations, as significant revenue generators, already manage urban planning.
- Encroachments encouraged by these bodies exacerbate urban flooding, undermining disaster management.
- **Missed Opportunity for Regional Collaboration:** Rising zoonotic and epizootic diseases require regional strategies.
 - No reference to regional groupings like **SAARC**, **BIMSTEC**, or **BRICS** for collaborative disaster response.
 - **Examples:**
 - The 2011 **SAARC Agreement on Rapid Response to Natural Disasters** emphasizes shared preparedness across porous South Asian borders.
 - The absence of regional collaboration weakens India's ability to tackle cross-border disasters effectively.

Source: [The Hindu: The lapses in the disaster management Bill](#)



Myth of meritocracy, caste-based disparities in IT sector

Context

- India's IT sector, a significant contributor to the country's economy, is often regarded as a model of meritocracy and inclusivity.
- However, recent analysis reveals persistent caste and gender-based inequalities in employment and wages, contradicting the sector's inclusive image.

More in News

- The study utilized data from two NSSO surveys: the 78th round (2020-21) and the 68th round (2011-12), encompassing a sample of 29,289 individuals.
- The analysis controlled for observable factors affecting employment outcomes and used public sector industries as a benchmark for probability estimation.

Facts

- Contributes **over 7%** to India's GDP.
- Serves as a **preferred career destination** due to its performance-driven, high-paying nature.
- Sub-Saharan African countries view India's IT sector as a model for replicating success in software exports.

Findings Of Recent Analysis

- **Employment Probabilities:**
 - Probability of SC and ST employment in IT is **10%**, compared to **27%** for upper castes.
 - Disparities increased over time:
 - 2011-12: Lower castes had a **6% probability** of IT sector employment compared to **17%** for upper castes (**deficit of 11%**).
 - 2020-21: Probabilities rose to **10%** and **27%**, but the deficit widened to **17%**.
 - Indicates that the IT sector, despite growth, fails to address exclusionary social barriers.
- **Wage Disparities:**
 - SC and OBC workers in IT earn **24.9%** and **22.5%** less than upper caste workers, respectively.
 - Wage differentials persist even after adjusting for education and employment type (regular vs. temporary).
 - Reflects **labour market segmentation**, relegating lower castes to low-paying job roles with limited mobility.
- **Gender Inequalities:** Women in IT earn **26.2% less** than men, regardless of caste.
 - Employment probabilities for women are closer to those of men, but wage disparities highlight systemic gender bias.

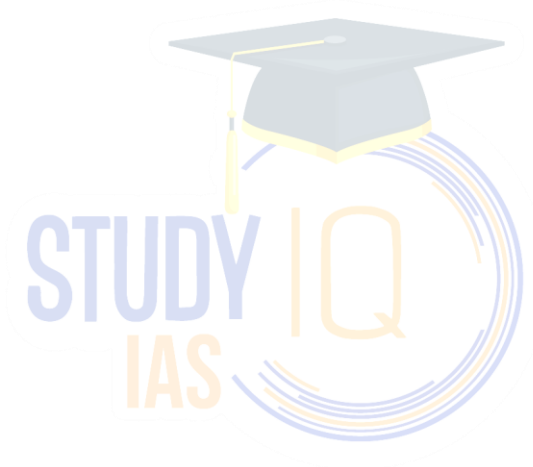
Implications of Inequalities

- **Economic Efficiency:** Exclusion of marginalised groups undermines productivity and efficiency.
- **Social Justice:** Labour market segmentation reinforces structural barriers and hinders upward mobility.
- **Missed Opportunities for Diversity:**
 - **International Labour Organization (2022):** Workplace diversity correlates with higher productivity and innovation.
 - **Network for Business Sustainability (Canada):** A **1% increase in racial diversity** boosts productivity gains by \$729-\$1,590 per worker annually.
- **Vicious Cycle of Poverty:** Marginalised groups, discouraged by unequal returns on education and skills, are trapped in poverty.

Policy Recommendations

- **Workforce Diversity Disclosure:** Mandate companies to publicly share their workforce diversity matrix.
 - Increase transparency to promote accountability and encourage diversity.
- **Support for Lower-Caste Entrepreneurs:** Provide incentives and training to foster entrepreneurship in high-productivity sectors.
- **Bridging the Skill Gap:** Implement targeted programs to enhance the skill levels of marginalised groups, enabling equitable job market participation

Source: [The Hindu: Myth of meritocracy, caste-based disparities in IT sector](#)



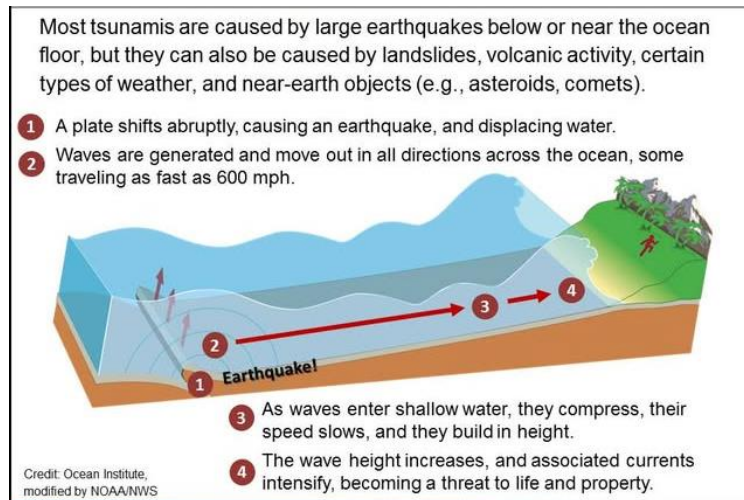
Detailed Coverage

20th Anniversary of 2004 Indian Ocean Earthquake And Tsunami

Context

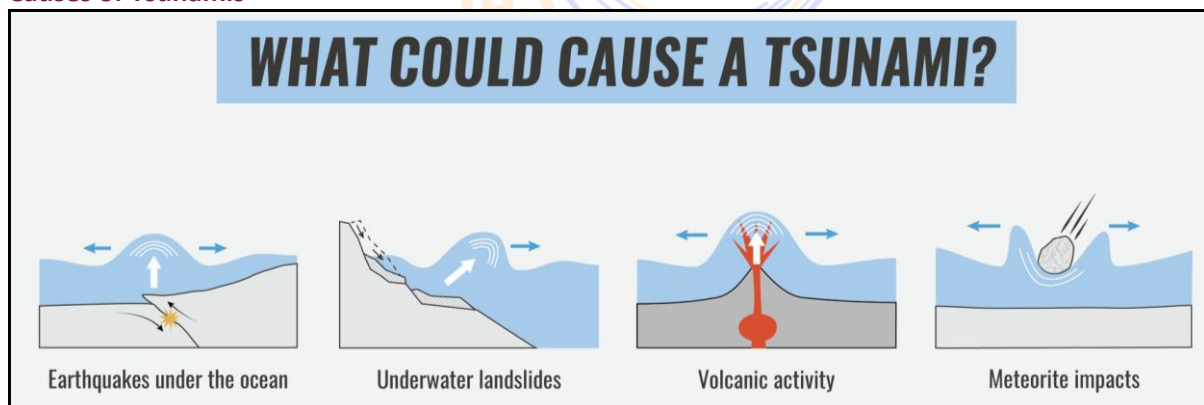
December 26, 2024, marks the 20th year since the 2004 Indian Ocean earthquake and tsunami.

What is a Tsunami?



- Tsunami, often referred to as a seismic sea wave, is a series of large ocean waves caused by sudden and significant disturbances on the seafloor or near the ocean's surface.
- The term “tsunami” originates from the Japanese words “tsu” (meaning harbor) and “nami” (meaning wave).

Causes of Tsunamis



- **Undersea Earthquakes:** The most common cause of tsunamis.
 - Occurs when tectonic plates suddenly shift, causing vertical displacement of water.
 - Typically associated with subduction zones, where one tectonic plate slides beneath another.
- **Volcanic Eruptions:** Volcanic explosions or the collapse of underwater volcanoes can displace large volumes of water.
 - **Example:** The eruption of Krakatoa in 1883 caused a devastating tsunami.
- **Landslides:** Submarine landslides (underwater) or coastal landslides can create tsunamis.
 - **Example:** The Lituya Bay tsunami (1958) was triggered by a massive landslide.
- **Meteorite Impacts:** Rare but catastrophic.

- Large meteors striking the ocean can generate tsunamis due to the sudden displacement of water.

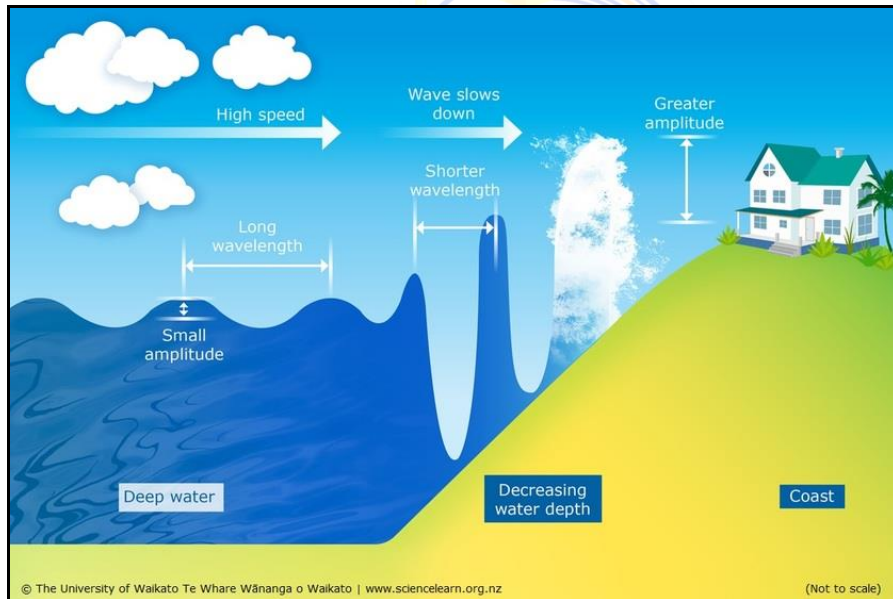
Facts

- Most tsunamis—about 80 percent—happen within the Pacific Ocean’s “Ring of Fire.”



- Krakatoa, also transcribed Krakatau is a caldera located in the **Sunda Strait, Indonesia**.

Characteristics of Tsunamis



- **Wave Speed:** Tsunami waves can travel at speeds up to 800 km/h (similar to jet planes) in deep water.
 - The speed decreases as the waves approach shallow coastal areas.
- **Wavelength and Amplitude:**
 - **In deep water:** Long wavelengths (100-500 km) and low amplitudes (less than 1 meter), making them difficult to detect.
 - **Near the shore:** Shorter wavelengths and significantly higher amplitudes (up to 30 meters or more) due to a phenomenon known as "wave shoaling."

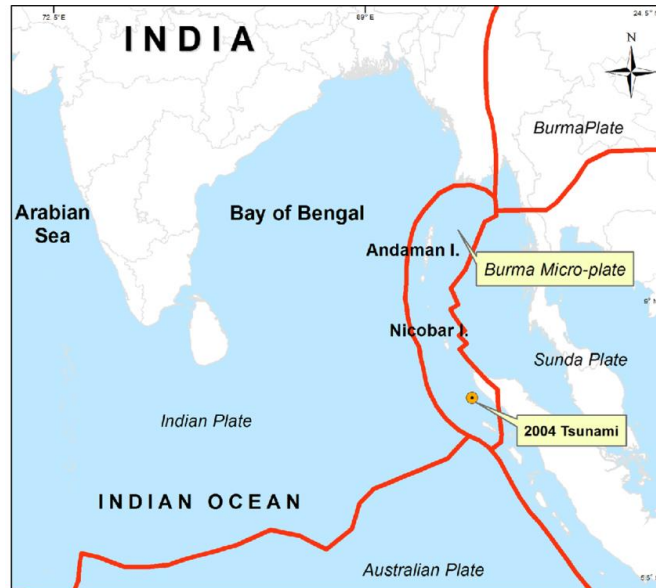
- Wave shoaling is the change in shape and behaviour as waves propagate into water of

decreasing depth.

- This results in decreases in wave speed and wavelength while wave height increases.

- **Multiple Waves:** Tsunamis often occur as a series of waves (wave train) with intervals ranging from minutes to hours.
 - The first wave is not always the largest or most destructive.

2004 Indian Ocean Tsunami



- On December 26, 2004, a massive earthquake measuring 9.1 in magnitude struck off the coast of Sumatra, Indonesia.
- This event was the third largest earthquake recorded globally since 1900.
- The earthquake originated from a depth of 30 kilometers beneath the ocean floor, specifically in the Sunda Trench, where the Indo-Australian plate is subducting beneath the Burma microplate.

Indian Government Steps Post-Tsunami

- The Indian Tsunami Early Warning Centre (ITEWC), established in 2007 by the Union Ministry of the Earth Sciences of the Government of India.
 - **Operates from:** Indian National Centre for Ocean Information Services (INCOIS) at Hyderabad.
 - **Capabilities:**
 - 24/7 monitoring of seismic and ocean data.
 - Equipped with **bottom pressure recorders (BPRs), tidal gauges, and seismological stations.**
 - Real-time analysis of data from IMD and 350 global seismic stations.
 - **Response Time:** Capable of identifying a potential tsunami-triggering earthquake and issuing alerts within 10 minutes.

What are the 6 Critical Lessons From the 2004 Tsunami?

- **Importance of Mangroves as Natural Buffers:** Mangroves play a crucial role in protecting coastal areas by acting as natural barriers against waves and storm surges. Their destruction for economic activities like shrimp farming, tourism, and wood harvesting exacerbates disaster impacts.

- A study by UNEP (2005) highlighted that areas with dense mangrove forests experienced significantly lower tsunami damage. For example, coastal villages in Tamil Nadu with mangroves reported fewer casualties.
- As per the India State of Forest Report, 2023, mangrove cover in India is 4,991.68 km², representing a **net decrease of 7.43 km² since 2021**.
- **Reforestation initiatives** such as the **Union government's Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI)** programme to restore mangrove cover in India should be promoted.
- **Keep Common Resources in Public Domain:** Privatization of coastal lands displaces local communities and undermines traditional livelihoods, leading to socio-economic vulnerabilities.
 - In Thailand, during the 1980s-90s, privatization led to the loss of public access to coastlines, with displaced communities transitioning to informal, low-paying jobs. This structural shift increased reliance on global economic trends, creating instability.
 - In India, tourism-driven privatization of beaches in states like Goa and Kerala has raised similar concerns about displacing fishing communities.
- **Economic Disruptions and Livelihood Shifts:** Tsunamis disrupt local economies, creating winners and losers in the market. Traditional livelihoods, like artisanal fishing, are often replaced by mechanized methods, leading to environmental degradation.
 - In Tamil Nadu, post-tsunami relief efforts pushed mechanized fishing, displacing traditional practices and intensifying over-fishing.
 - Land prices in tsunami-hit areas rose sharply, benefiting asset owners but marginalizing displaced communities.
 - A study in 2006 (by the Food and Agriculture Organization) revealed that 75% of Indian coastal fishing communities reported reduced income and increased dependence on external markets.
- **Addressing Inequalities in Relief and Rehabilitation:** Relief efforts often reflect and reinforce existing social inequalities, with marginalized groups receiving inadequate support.
 - In Sri Lanka, Tamil minorities in the north and east received disproportionately less aid than other communities.
 - In India, Dalit and tribal communities, who worked as laborers in fishing economies, were largely excluded from compensation packages.
- **Gender Sensitivity in Relief and Rehabilitation:** Women's specific needs are often overlooked during disaster recovery, exacerbating their vulnerabilities.
 - Women involved in fish processing and shell collection were excluded from relief measures as assets were registered in men's names.
 - Widows in fishing communities faced barriers to accessing assistance due to the lack of identity documentation.
- **Engage with Local Structures for Resilient Recovery:** Community-based local institutions, such as fishing cooperatives, play a critical role in organizing relief and maintaining resilience.
 - Imposition of external democratic norms often disrupted community cohesion.
 - **E.g.,** Attempts to replace traditional cooperative practices with individual-based aid distribution led to increased tensions and dependency.
 - A study in 2007 by the National Institute of Disaster Management (NIDM) emphasized the need for long-term engagement with local structures to address issues like gender inequality organically.

Sources:

- [The Hindu: How the 2004 Indian Ocean quake transformed tsunami science](#)
- [The Hindu: The lessons from a spectrum of areas](#)