

**BILATERAL RELATION GS PAPER II**

**India-China Water Tensions: The Brahmaputra Factor**

China's hydropower project on the Yarlung Tsangpo (Brahmaputra) in Medog County, close to the Indian border, raises concerns over **hydro-hegemony, ecological risks, and strategic security** for India. Given the river's significance for **water security, energy, ecology, and geopolitics**, this issue is crucial for India's interests.

**Significance of the Brahmaputra for India**

- **Water Security & Agriculture:** Lifeline for Assam, Arunachal Pradesh, and Meghalaya; vital for irrigation, drinking water, and Assam's tea industry. Seasonal flooding supports crop cycles, impacting food security.
- **Hydropower Potential:** Projects like **Lower Subansiri, Dibang, Kameng** are crucial for clean energy. The Subansiri Project (2,000 MW) highlights its energy relevance.
- **Ecology & Biodiversity:** Supports **Kaziranga, Manas National Parks** and the endangered **Gangetic river dolphin**; home to **Majuli (world's largest river island)** and diverse wetlands.
- **Strategic Importance:** Transboundary river in India-China rivalry; climate change on the Tibetan Plateau further intensifies strategic concerns.
- **Connectivity:** Key inland waterway (National Waterway 2) enhances trade and transport in Northeast India.

**Impacts of China's Hydropower Project**

- **Environmental Risks:** Alters flow, sedimentation, and ecosystems, threatening fisheries and agriculture in Assam/Arunachal. Similar impacts seen on Mekong River states.
- **Seismic Vulnerability:** Located in **Seismic Zone V**, raising risks of earthquake-induced flooding.
- **Energy Competition:** Reduces India's hydropower scope; triggers **hydrological arms race** (India's proposed **Upper Siang Project: 11,000 MW**).
- **Displacement & Internal Security:** Alters floodplains, displaces communities (Majuli erosion), risks cross-border migration from Bangladesh.
- **Diplomatic Strain:** Dam near disputed territory hampers trust-building and bilateral talks.

**Measures for India**

1. **Strengthen Multilateral Engagement:**
  - Expand **Joint Rivers Commission** with China (model: **Ganges Water Agreement**).
  - Advocate cooperative treaties on lines of **Indus Waters Treaty**.
2. **Domestic Preparedness:**
  - Invest in **real-time hydrological monitoring** and flood control infrastructure (e.g., Tehri Dam model).
3. **Strategic River Infrastructure:**
  - Complete downstream barrages/reservoirs (Upper Siang, Dibang Valley) for **hydro-strategic leverage**.
4. **Regional & NGO Partnerships:**
  - Collaborate with **Bangladesh, Bhutan, Nepal** for flood modeling and advocacy via NGOs (e.g., **International Rivers**).
5. **Water Resilience:**
  - Diversify water sources (rainwater harvesting, desalination) and adopt **efficient irrigation** (Israel's model).

**Conclusion**

India must balance **strategic deterrence, ecological prudence, and cooperative diplomacy**. Strengthening infrastructure, leveraging technology, and fostering regional partnerships, aligned with **principles of equity, no-harm, and SDG 6**, can turn this challenge into an opportunity for **water security, regional stability, and sustainable growth**.

**GOVERNANCE GS PAPER II**

**Judicial Discretion in Granting Bail under POCSO Act**

- A recent order of a Mumbai POCSO court granting bail to a female teacher accused of sexually assaulting a teenage boy has reignited debates on bail jurisprudence under the **Protection of Children from Sexual Offences (POCSO) Act, 2012**.
- The Act is stringent, aimed at protecting minors (<18 years) from sexual offences, and departs from the principle of "presumption of innocence."

**Nature of Bail under POCSO:**

- **Cognizable & Non-bailable:** Arrests can be made without a warrant, and bail is not automatic.
- **Burden of Proof:** Unlike general criminal law, the accused must prove innocence.
- **No Specific Statutory Bail Guidelines:** Courts apply general bail principles under **Section 483 BNSS, 2023 (earlier Sec 439 CrPC, 1973)**:
  - Nature/gravity of offence, severity of punishment.

- Risk of absconding.
- Likelihood of evidence tampering or witness influence.

**Judicially Evolved Bail Parameters:**

1. **Dharmander Singh v. State (Delhi HC, 2020):**
  - Identified factors for bail:
    - Age of victim and accused, and age gap.
    - Relationship between parties.
    - Presence of coercion.
    - Conduct of accused post-offence.
  - Clarified these are **non-binding guidelines**.
2. **SC in Deshraj @ Musa v. State of Rajasthan (2024):**
  - Granted bail to an 18-year-old boy in a consensual relationship with a 16-year-old girl.
  - Considered time in custody, consensual nature, and minimal age gap.
3. **Recent Trends:**
  - Courts are factoring in **consensual adolescent relationships**, especially if the victim's **Section 164 CrPC (now BNSS equivalent) statement** supports it.
  - Bail more likely post victim's testimony and evidence collection.

**Consent and Legal Grey Zone:**

- **POCSO does not recognise consent below 18:** Any sexual act with a minor is deemed statutory rape, even if voluntary.
- This leads to **criminalisation of adolescent romantic relationships**, creating tension between child protection and individual autonomy.

**Debate on Age of Consent:**

- **Indira Jaising's Petition (2025):** Sought lowering age of consent to 16, arguing:
  - Criminalising adolescent relationships infringes on **fundamental rights**.
- **Centre's Stand:** Opposed lowering age, stating it would **weaken child protection laws** and increase abuse risks.

**Significance:**

- **Balancing Rights:** Bail decisions reflect the tension between **constitutional liberties (Article 21)** and **protection of minors**.
- **Judicial Discretion:** Courts are moving towards nuanced interpretation, especially in consensual adolescent cases.
- **Policy Debate:** Raises broader questions on reforming POCSO to avoid over-criminalisation while safeguarding children.

**Way Forward:**

- Judicially evolved guidelines for bail in POCSO cases.
- Parliamentary review of **age of consent** amidst changing social realities.
- Balance between **child protection framework** and **individual autonomy of adolescents**.

**PRELIM FACTS**

**1. Single Window System for Appointment of State DGPs (2025)**

- The Union Government has notified a **Single Window System (SWS)** for the appointment of **State Director-General of Police (DGP)/Head of Police Force (HoPF)**, effective **April 22, 2025**.
- This comes in the backdrop of several states not complying with **Supreme Court guidelines in the Prakash Singh case (2006)** and Ministry of Home Affairs (MHA) circulars.

**Key Features of Single Window System (SWS):**

1. **Objective:**
  - Streamline DGP appointments and ensure compliance with SC guidelines.
  - Address delays and discrepancies in proposals sent by States to UPSC.
2. **Mechanism:**
  - **Checklist & Standard Formats:** States must submit proposals using detailed templates to UPSC.
  - **Certification:** A State Government officer (not below Secretary rank) must certify:
    - Minimum tenure compliance.
    - Eligibility as per SC/MHA norms.
3. **Eligibility Criteria:**
  - Officer must have **minimum 6 months residual service** from date of vacancy.
  - Proposal must be sent **3 months before vacancy** arises or DGP's superannuation.
4. **UPSC Empanelment Process:**

- States send eligible officer names → UPSC empanels and sends **3 names (in order of seniority)** to the State for selection.
- 5. **Non-compliance:**
  - Proposals with discrepancies will be **returned immediately**.

**Current Developments:**

- **Tamil Nadu** yet to send proposal despite DGP vacancy (Aug 30, 2025).
- Out of **8 eligible officers**, UPSC likely to recommend **Seema Agrawal, Rajiv Kumar, Sandeep Rai Rathore**.
- SC hearing petitions alleging violation of 2006 norms (e.g., Jharkhand DGP Anurag Gupta case).

**Background: Prakash Singh Case (2006):**

- SC issued **police reforms directives**, including:
  1. Fixed **2-year tenure for DGP**.
  2. Appointment from UPSC panel of 3 senior-most IPS officers.
  3. Minimum **6 months residual service** at appointment.

**2. NISAR Satellite Launch – UPSC Prelims Notes (350 words)**

The **NASA-ISRO Synthetic Aperture Radar (NISAR)** satellite was successfully launched on **July 30, 2025**, from **Satish Dhawan Space Centre, Sriharikota**, by **GSLV-F16**. It is the **first joint satellite mission of NASA and ISRO**.

**Key Features of NISAR:**

- **Type:** Earth Observation Satellite.
- **Weight:** **2,392 kg**.
- **Mission Life:** 5 years.
- **Orbit:** Sun-synchronous polar orbit (first time GSLV achieved this).
- **Observation Swathe:** **242 km**.
- **Frequency:** Dual-frequency Synthetic Aperture Radar (SAR):
  - **L-band (NASA)**
  - **S-band (ISRO)**
- Equipped with **NASA's 12-metre unfurlable mesh reflector antenna** integrated with **ISRO's modified I3K bus**.

**Objectives and Applications:**

- **Disaster Management:**
  - Monitor **earthquakes, floods, landslides, storm characterization**.
  - Aid **quick response during disasters**.
- **Environmental Monitoring:**
  - Detect **ground deformation, ice sheet movement, sea ice classification, and shoreline monitoring**.
  - Track **soil moisture, vegetation changes, and surface water resources**.
- **Agriculture:**
  - **Map farmland** to improve crop output.
  - Support **precision agriculture and irrigation planning**.
- **Infrastructure Monitoring:**
  - Help in assessing **critical infrastructure stability** (e.g., dams, bridges).

**Technical Highlights:**

- **Dual-frequency SAR (L & S bands)** enables **day-and-night, all-weather observation** every **12 days**.
- Uses **SweepSAR technology** for wide coverage with high spatial resolution.
- **Deployment Phase:** 12-metre reflector antenna deployed in orbit (9 m away).
- **Commissioning Phase:** First 90 days dedicated to **calibration and instrument checks**.
- **Science Phase:** Followed by **data collection, orbit maintenance, calibration & validation**.

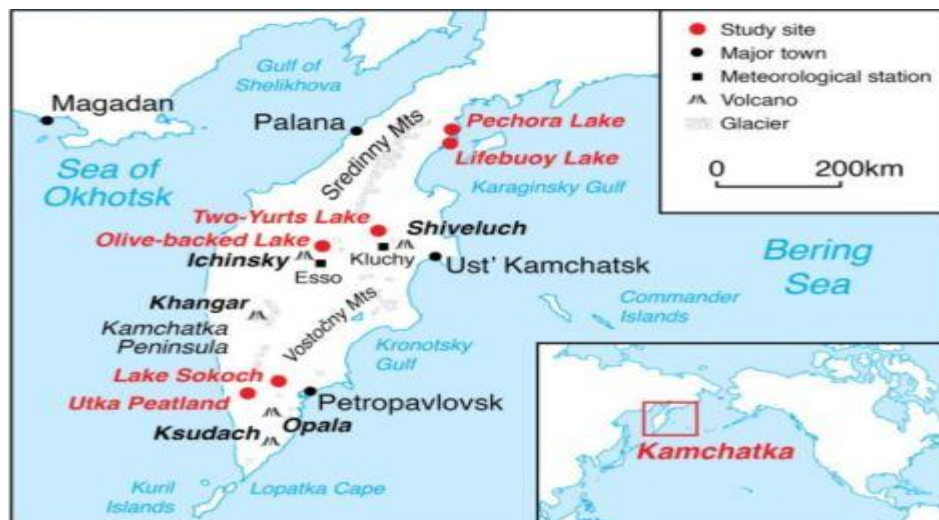
**Significance:**

- Enhances **India's disaster resilience and climate monitoring**.
- Boosts **precision agriculture and water resource management**.
- Strengthens **India-U.S. space collaboration** and **dual-use (civil & strategic) Earth observation capacity**.
- Provides **real-time high-resolution data** aiding **SDG 13 (Climate Action)**.

**3. Kamchatka Peninsula**

A powerful 8.7-magnitude earthquake struck off Russia's Far East Kamchatka Peninsula, triggering tsunami warnings across the Pacific region.

About Kamchatka Peninsula



- **Location:** It is a peninsula located in **far eastern Russia** and lying between the **Sea of Okhotsk** on the west and the **Pacific Ocean and Bering Sea** on the east.
- **Topography:** Its topography is dominated by **two mountain chains** – the **Sredinny and Vostochny Mountains** which are **separated by the Central Kamchatka Depression** – a deep and 150 km wide valley.
- **Rivers:** The **Kamchatka River** (falls into Pacific Ocean) and the **Bystraja River** (falls into Sea of Okhotsk) are the main rivers of the Peninsula.
- **Peak:** The highest peak is the **Klyuchevskaya Sopka (4750 m)** which is also the **highest active volcano in Eurasia**.
- **Volcanic arcs:** Kamchatka is one of the world's **most volcanically active regions** with the **Pacific Plate is actively subducting beneath the Kamchatka Peninsula** at about 80–100 mm per year resulting in three distinct volcanic arcs.
  - The Peninsula contains the **"volcanoes of Kamchatka"**, a **UNESCO World Heritage Site**, that form part of the Ring of Fire.
- **Geysers:** It is home to the **Valley of Geysers**, located at the junction of the **Shumnaya and Geysernaya rivers**.
  - The Valley of Geysers has the **second-largest concentration of geysers** in the world (after Icelandic geyser fields).
- **Oceanic trench:** The **10,500-metre-deep Kuril–Kamchatka Trench** runs immediately offshore along the Pacific coast of the peninsula.
- **Climate:** It is generally considered to have a **sub-arctic climate** and is wetter and milder than inland parts of east Siberia.
- **Ocean currents:** **Cold currents in the Sea of Okhotsk** and the **cold East Kamchatka Current** (also called the **Oyashio or Kurile current**) have an important impact on the coastal margins of The Peninsula resulting in a cool and maritime climate.
- **Vegetation:** It lies in the **boreal zone** of Eurasia and about a third of the area is forested and another one-third is covered with shrub.
- **Fauna:** **Brown bear (*Ursus arctos beringianus*)**, snow ram, northern deer, sable and wolverine, **Stellar's sea eagle (50% of the world's population)**, white-tailed eagle, golden eagle, gyrfalcon and peregrine falcon.
- **Inhabitants:** Most of the inhabitants are **Russian**, with **indigenous Koryak, Chukchi, and Kamchadal tribes**.

#### 4. National Stock Exchange of India (NSE)

The National Stock Exchange (NSE) surpassed the 23-crore unique trading account mark in July 2025, just three months after reaching 22 crores.

##### **About National Stock Exchange of India (NSE):**

- **What is NSE?**
  - The **National Stock Exchange (NSE)** is India's leading stock exchange and one of the **largest globally** by market capitalization and derivative trading volume.
  - It is considered an **institution of national importance** and a **critical market infrastructure institution**.
- **Incorporated:** 1992
- **Recognised by SEBI:** April 1993
- **Commenced operations:** 1994
- **Headquarters:** Mumbai, Maharashtra
- **Key Objectives:**
  - Democratise capital markets by making trading accessible to all eligible participants.
  - Ensure transparency, efficiency, and technological innovation in market operations.
  - Promote financial inclusion through widespread investor participation and awareness.
- **Salient Features:**



- **Electronic Trading Pioneer:** First Indian exchange to introduce screen-based, anonymous order-driven trading.
- **Global Ranking:** 5th largest stock exchange by market cap; largest derivatives exchange globally (by contracts traded).
- **Technology-Driven:** Robust, resilient platform ensuring high-speed, secure transactions across asset classes.
- **Regulated Access:** Open to all who meet qualifications—no cartel of brokers, promoting a level playing field.
- **Innovation Hubs:**
  - **NSE IX** at GIFT City (multi-asset global trading).
  - **NSE EMERGE** (platform for SMEs/startups).
  - **Social Stock Exchange** (2023) for fundraising by non-profits.
- **Core Functions:**
  - Operates markets for equity, debt, derivatives, ETFs, REITs, InvITs.
  - Provides clearing, settlement, and risk management services.
  - Runs investor education and awareness programs.

#### ANSWER WRITING

**Q. The IT sector has been a cornerstone of India's economic growth, contributing significantly to exports and employment. Analyse the key challenges it faces today due to structural shifts in the global economy. Suggest policy measures to ensure sustained employment generation in the industry." (15 Marks, 250 words)**

India's IT sector has been a key driver of economic transformation, powering exports, employment, and upward mobility for engineering graduates. However, structural shifts such as digital transformation, automation, changing client demands, and the rise of AI are reshaping its growth and employment prospects.

#### **How the IT Sector Contributes Significantly to Exports and Employment**

- **Major Export Contributor:** The IT sector accounts for approximately 50% of India's total services exports, making it a linchpin of the country's foreign exchange earnings.
- **Large Employment Base:** In 2024, the IT sector employed over 5 million people across engineering, sales, management, and support roles, offering stable job opportunities to a broad portion of India's youth.
- **Economic Value Addition:** The IT industry contributed around 7% to India's GDP in 2024, reflecting its critical role in economic output and national growth.
- **Pathway for Upward Mobility:** IT and ITes jobs have historically been widely accessible to engineering graduates, serving as a straightforward path to middle-class prosperity in India.
- **Multiplier Effect:** The sector has significant spillover benefits, supporting jobs in ancillary industries such as real estate, transportation, telecom, and education due to the demand generated by IT professionals.

#### **Key Challenges the IT Sector Faces Today Due to Structural Shifts in the Global Economy**

- **AI and Automation Threat:** The rise of AI threatens many entry-level and repetitive jobs in IT, as generative AI and automation can perform tasks that previously required large numbers of fresh graduates.
- **Skill Mismatch:** Growing "skill-mismatch" issue, where the existing workforce does not align with rapidly changing client and industry requirements like demand for AI, cybersecurity, and cloud skills over basic support functions.
- **Global Economic Volatility:** Reduced global spending especially from major clients in the US and Europe due to economic uncertainties post-pandemic has led to decreased net hiring and project delays.
- **Wage Stagnation:** Despite sector growth, **starting salaries in IT have remained stagnant** for nearly a decade, impacting living standards and reducing the sector's attractiveness to new talent.
- **Alternative Opportunities and Declining Bench Strength:** GCCs employing nearly 2 million and a thriving startup ecosystem are pulling talent from traditional IT, as firms cut excess bench staff.

#### **Policy Measures to Ensure Sustained Employment Generation in the Industry**

- **Holistic Skilling Initiatives:** Implement rapid, affordable, and continuous skilling and upskilling programs focused on emerging technologies like AI, cloud computing, cybersecurity, and chip design to align the workforce with new industry needs.
- **Overhaul of Higher Education:** Reform engineering and technical education to include applied, hands-on learning, **fostering domain expertise** and adaptability rather than rote skills.
- **Incentives for Diversification:** Provide policy incentives to increase growth in related sectors such as biotech, pharmaceuticals, and advanced manufacturing, reducing over-reliance on IT for mass employment.
- **Support for Startups and SMEs:** Facilitate easier access to funding, mentorship, and global markets for startups, including those working in deep tech and new-age IT services, thereby expanding the employment base.
- **Encourage R&D and Innovation:** Increase government and private sector spending on R&D, creating an environment that nurtures innovation centers, incubation labs, and next-generation product development hubs.

#### **Conclusion**

India's IT sector, though a global outsourcing leader, faces pressures from automation, AI, and shifting markets. Moving up the value chain, fostering specialised skills, and diversifying services backed by reskilling and innovation-focused policies can sustain its role as a driver of exports, jobs, and tech leadership.

**MCQ**

1. With reference to the **Single Window System (SWS)** for the appointment of State DGPs, consider the following statements:
  1. It was introduced by the Union Government in 2025 to ensure compliance with Supreme Court guidelines in the *Prakash Singh* case (2006).
  2. Only officers with a minimum of 1-year residual service from the date of vacancy are eligible.
  3. The proposals sent by States to UPSC must be certified by a State Government officer not below the rank of Secretary.
 Which of the statements given above is/are correct?
  - a) 1 and 2 only                      **b) 1 and 3 only**
  - c) 2 and 3 only                      d) 1, 2 and 3
2. Which of the following features are correct about the NISAR Satellite launched jointly by NASA and ISRO in 2025?
  1. It is an Earth Observation satellite launched by GSLV-F16.
  2. It uses dual-frequency SAR in L-band and X-band.
  3. It operates in a Sun-synchronous polar orbit.
  4. Its primary objective is to enhance maritime security in the Indo-Pacific region.
 Select the correct answer using the code below:
  - a) 1 and 2 only                      **b) 1 and 3 only**
  - c) 2 and 4 only                      d) 1, 2 and 3
3. Consider the following statements regarding the Kamchatka Peninsula:
  1. It is located between the Sea of Okhotsk and the Pacific Ocean.
  2. It contains the "Valley of Geysers," which has the largest concentration of geysers in the world.
  3. It lies on the Pacific Ring of Fire and hosts the highest active volcano in Eurasia.
 Which of the statements given above is/are correct?
  - a) 1 and 2 only                      b) 2 and 3 only
  - c) 1 and 3 only**                      d) 1, 2 and 3
4. Which of the following features correctly describe the National Stock Exchange of India (NSE)?
  1. It was the first Indian exchange to introduce electronic, screen-based trading.
  2. It is the world's largest stock exchange by market capitalization.
  3. It operates platforms such as NSE IX at GIFT City and NSE EMERGE for SMEs/startups.
  4. It functions under the regulatory oversight of SEBI.
 Select the correct answer using the code below:
  - a) 1, 3 and 4 only**                      b) 2 and 4 only
  - c) 1 and 2 only                      d) 1, 2, 3 and 4
5. The Supreme Court directives in the *Prakash Singh* vs. Union of India (2006) case pertain to which of the following reforms?
  - a) Judicial accountability and fixed tenure for High Court judges.
  - b) Police reforms including fixed tenure for DGP and UPSC-based appointments.**
  - c) Civil services reform focusing on transparent recruitment.
  - d) State legislative autonomy in law and order issues.
6. The Kuril-Kamchatka Trench, recently in the news, is associated with which of the following?
  - a) Formation of new coral reefs in the North Pacific.
  - b) Deepest oceanic trench in the Atlantic Ocean.
  - c) Subduction of the Pacific Plate beneath the Kamchatka Peninsula.**
  - d) Rift valley formation in East Russia's interior plains.
7. Consider the following statements regarding the Brahmaputra River:
  1. It originates in the Kailash ranges of the Himalayas and is known as Yarlung Tsangpo in Tibet.
  2. Majuli, the world's largest river island, is located on this river.
  3. The Subansiri Project, a major hydropower project on the Brahmaputra, is located in Assam.
 Which of the statements given above is/are correct?
  - a) 1 and 2 only**                      b) 2 and 3 only
  - c) 1 and 3 only                      d) 1, 2 and 3
8. The term "Hydro-hegemony," recently seen in news in the context of India-China water relations, refers to:
  - a) The dominance of one state over another in transboundary river management through military power.
  - b) The control of upstream riparian states over water resources impacting downstream states.**
  - c) An agreement where all riparian states equally share river waters.
  - d) A World Bank-mediated framework for international river disputes.
9. Under the Protection of Children from Sexual Offences (POCSO) Act, 2012, which of the following statements is/are correct?
  1. Offences under the Act are cognizable and non-bailable.
  2. The burden of proof lies on the accused, deviating from general criminal law principles.
  3. Consent of a minor (under 18) is legally valid in cases of consensual relationships.
 Select the correct answer using the code below:
  - a) 1 only                                      **b) 1 and 2 only**
  - c) 2 and 3 only                      d) 1, 2 and 3
10. With reference to the "Age of Consent" debate in India, consider the following:
  1. Indira Jaising filed a petition in 2025 seeking to lower the age of consent to 16 years.
  2. The Central Government supported the petition, stating it aligns with global standards.
  3. Lowering the age of consent is argued to prevent criminalisation of adolescent consensual relationships.
 Which of the statements is/are correct?
  - a) 1 only                                      **b) 1 and 3 only**
  - c) 2 and 3 only                      d) 1, 2 and 3