VAJIRAO IAS ACADEMY

India's Premier Coaching Institute for Civil Services (IAS/PCS)

Current Affairs

WEEKLY

31st August - 05th September

2026

DIRECTOR'S MESSAGE

"Civil Service is not just a job; it is an opportunity, to do your bit for society and to contribute to nation-building. It is an opportunity to realise your potential and make a meaningful contribution in the emancipation of masses."

Mr. Dilip Kumar
Director, Vajirao IAS Academy

Good Civil Servants ensure efficient and smooth governance. They are the backbone of the country and they have the power to make a difference in people's life.

We have set up extremely tough targets for ourselves. Now a day's, most of the students are well aware and focused about their aim. They just need a streak of guidance. We feel that we have done our bit in providing that blue streak of guidance and we are honoured to be a reason of smile on certain lips, proud to be your teacher, friend and guide.

INDEX

IAS EXAM.com
POWERED BY VAJIRAO IAS ACADEMY

1. Simplified Editorials

[1.1] India & UN CERD Report 1

[1.2] Treated Wastewater Reuse for Water Security 3

[1.3] India's Economy Faces a Test of Resilience 5

[1.4] Youth Power in Indian Elections 7

[1.5] Reforming India's BIT Regime 9

2. Daily Current Affairs

[2.1] Hanging Glaciers in Himalayas: India's New Disaster Risk 11

[2.2] Renewable Energy Is Reshaping India's Power Sector 14

[2.3] Nepal Floods 2026: Climate Change, Himalayan Dams and Disaster Risk 16

[2.4] India-Kuwait Joint Defence Committee (JDC) 19

[2.5] India-Uzbekistan Comprehensive Strategic Partnership 21

[2.6] Baltic Way: Gandhian Satyagraha and the Fall of Soviet Rule 23

[2.7] India-Iran Ties: Chabahar, Hormuz and the Road Ahead 25

[2.8] Strengthening Financial Cybersecurity Against AI-Driven Threats .28

[2.9] One Nation One Time: India's New IST Rules 30

[2.10] Distinguished Jurist in Supreme Court 33

[2.11] Himalayan Disasters: Need for Anticipatory Preparedness 36

[2.12] Bihar-Jharkhand Sone Water Dispute 39

[2.13] India-Pakistan Water Dispute: The Road Ahead 42

[2.14] Semicon 2.0: India's Chip Push 45

[2.15] SCO Summit: India's Call to End Terror Ecosystem 47

[2.16] Delhi HC Protects Maternity Rights 49
[2.17] NASA Roman Space Telescope 51
[2.18] Reforming Allied Healthcare Education 54
[2.19] AI in Water Data Governance 56
[2.20] UNEP Climate Report: The World Is Heading Beyond 1.5°C 59
[2.21] Caste vs. Class: The 2027 Census Dilemma 62
[2.22] 'Supersized' El Niño: Global & Indian Impacts 64
[2.23] India-Belgium Defences Ties: A New Strategic Partnership 66
[2.24] EOS-05 Satellite: India's New Eye in the Sky 69
[2.25] Punjab Groundwater Crisis 71
[2.26] Himalayan Disasters: Tackling GLOFs and Avalanche Risks 73
[2.27] India-Nepal Climate Diplomacy: A Shared Challenge 75
[2.28] SCO and India: From Soft Power to Strategic Gains 77
[2.29] NCPCR Rescues 3,800+ Children from Child Labour 79

1.1 India & UN CEDA Report

Syllabus: Polity & Governance [GS 2]

Context:

The UN Committee on the Elimination of Racial Discrimination (CERD) published its concluding observations on the situation of India which is the first review of the country since 2007 under the International Convention on the Elimination of All Forms of Racial Discrimination (ICERD). The report highlighted issues about the use of violence by the police, hate speech and the security of oppressed communities such as Dalits, Adivasis and religious minorities, which led to a strong protest from Indian authorities.

Background:

- In August 2026, India's periodic review with the UN treaty body in Geneva was its first ever single review and constitutional report.
- **Treaty Mandate:** ICERD was ratified by Treaty of India in 1968. However, a core tension persists: India maintains that caste-based discrimination falls outside Article 1 of the Convention (as caste is distinct from race). The 30th anniversary of the treaty coincided with CERD's interpretation of the treaty to encompass all forms of inherited status.

Key Concerns raised by the UN CRED:

- **Law Enforcement and Violence:** The committee was deeply concerned about reports of excessive force, arbitrary detention and abuses committed by law enforcement officials against the members of the Scheduled Castes (Dalits), and Scheduled Tribes (Adivasis) and non-citizens.
- **Hate Speech and Minorities:** The report indicated that there has been an upsurge in hate speech, communal polarization and discriminatory speech against the ethno-religious minorities, Rohingya refugees and the Bengali-speaking Muslims.
- **Data and Citizenship Frameworks:** CERD highlighted the need to use old data from the 2011 Census and questioned citizenship verification systems like the National Register of Citizens (NRC) and administrative categories.

India's Official Stance:

- **Rejection of Observations:** The Ministry of External Affairs (MEA) has strongly rejected the observations, calling them "politically motivated" and "highly malicious" and also made on "sweeping generalizations".
- **Defense of Pluralism:** The high level inter Ministerial delegation headed by Solicitor General Tushar Mehta highlighted the constitutional protection, wide spread affirmative action measures, judicial avenues and the strong pluralistic traditions of India.

- **Oversreach Allegation:** New Delhi claimed that the committee went beyond the scope of the text of the convention in its definition of racial discrimination.

Way Forward:

- **Strengthening Domestic Institutions:** Improving the operational independence and financial resource of statutory institutions such as the National Human Rights Commission (NHRC), NCST and NCSC to investigate and resolve complaints within the country.
- **Data Modernization:** Carrying out new demographic surveys to meet the criticism in the international arena for lack of data and for providing welfare programmes efficiently.
- **Effective Use of UN Treaty Bodies:** Promoting good practice through strong data sharing whilst maintaining sovereign rights against outside misunderstandings of legal interpretation.

Source: The Hindu

1.2 Treated Wastewater Reuse for Water Security

Syllabus: Environment & Water Management [GS 3]

Context:

Water scarcity and declining groundwater levels in India have made the adoption of policies for the reuse of treated wastewater a critical necessity for sustainable development.

Context & Core Drivers for SRTW:

- **Rising Water Stress:** India supports 18% of the world's population with only 4% of its freshwater resources.
- **Groundwater Depletion:** Groundwater is heavily depleted for agriculture and industry.
- Treated sewage is being wasted as a dependable water source, as millions of litres of treated sewage are discharged to rivers each day.
- **Pollution Mitigation:** Reusing treated water literally helps prevent degradation of aquatic environment and freshwater sources, such as the Ganga.

Policy Landscape: State-Specific Approaches

1. Uttar Pradesh: Urban and Rural Development Model

Uttar Pradesh's approach focuses on high-volume urban areas and industrial clusters along the Ganga basin.

- Mandatory Industrial Reuse: The state has mandated re-use of treated sewage water in thermal power plants and industries within a certain radius of Sewage Treatment Plants (STP).
- Revenue Generation: It creates a well-defined tariff policy for commercial sale of treated water, and makes STPs financially sustainable.
- Agricultural Integration: UP is testing 'peri-urban' agricultural clusters to ensure that treated water is used in a safe and secure manner for non-food crops.

2. Uttarakhand: Eco-Sensitive and Terrain-Specific Model

As a mountainous state hosting the headwaters of major rivers, Uttarakhand focuses on ecological preservation and localized reuse.

- River Rejuvenation: The main goal is to keep the Ganges and its tributaries clean (Nirmal Dhara) and their flow rate consistent (Aviral Dhara).
- Decentralized Systems: Given the hilly landscapes, the policy highlights decentralised STPs (dSTPs) treating and reusing local water for horticulture and institutional flushing.
- Public-Private Partnership (PPP): Public Private Partnership (PPP) is being utilized by the state under the Namami Gange programme for long term operational accountability.

Key Benefits of SRTW Adoption:

- **Improves Water Security:** Offers a constant water supply, which is resilient to the effects of climate change.

- **Minimizes Fresh Water Footprint:** Saves pure fresh water used for drinking and household needs by reusing treated water in secondary industries.
- **Supports Circular Economy:** Converts wastewater into a valuable resource, creating revenue from the sludge (which is rich in nutrients) and treated water.

Major Challenges in Implementation:

- **Perception and Social Stigma:** Public reluctance (the "yuck factor") to the use of recycled wastewater, even for non-potable applications.
- **Institutional Fragmentation:** No coordination between pollution control boards, urban local bodies (ULBs) and water supply departments.
- **Quality Assurance:** Assure consistent treatment to avoid the possibility of contamination with heavy metals or pathogens in fields and factories.
- **Infrastructure Deficit:** Capital costs are high to construct dual-piping infrastructure to deliver treated water to end-users.

Way Forward for India:

- **National Standardization:** Adopting a common approach to water quality standards, with different standards for various end-use water purposes (e.g., water for landscaping versus water for industrial cooling).
- **Financial Incentives:** Subsidies, viability gap funding and tax rebates for industries investing in SRTW infrastructure.
- **Public Awareness:** Commencing focused communication strategies for building trust and social acceptance of recycled water.
- **Building Bylaw Modifications:** Introducing a building bylaw requiring that new townships in the City be equipped with dual-piping and decentralized greywater recycling.

Source: The Hindu

1.3 India's Economy Faces a Test of Resilience

Syllabus: Economy [GS 3]

Context:

While India's economy was put to a severe initial stress test in the past few quarters, with solid growth in the face of external stressors, the upcoming quarters are heavily testing the economy's stamina, with changing global demand, consumption pressures within the economy, and vulnerability of the rural population.

Introduction & Context:

The real GDP growth of India was also better than expected, having been projected to be in the 6%-7% range, but was 7.8% instead. This growth was fuelled by robust performance in both manufacturing and services and thus demonstrated that underlying strength was not a statistical fluke. This is, however, a pace that has to be maintained in the face of challenges ahead both domestically and internationally.

Key Growth Drivers:

- **Strong Sectoral Momentum:** Manufacturing and services have continued to perform well on high-frequency parameters such as Regular GST collections, e-way bill generation etc.
- **Monetary Stability:** Reserve Bank of India (RBI) Monetary Policy Committee (MPC) kept the policy rate unchanged at 5.25%, while revising its inflation projection to 5.0% with the growth outlook for FY27 revised to 6.7%.
- **External Buffers:** They continue to shield the economy from external shocks with sound macroeconomic policies, external debt levels that remain in check and sizeable foreign exchange buffers.

Emerging Challenges & Headwinds:

- **Sluggish Rural Demand:** Index of Industrial Production (IIP) data reflects weak demand sentiment, with the continued threat of poor monsoons to rural purchasing power.
- **Global Stuttering and AI Disruption:** The pressure on trade deficits relies heavily on services exports; however, a stuttering global economy and the proliferation of Artificial Intelligence services could reduce demand for Indian IT and business services.
- **Inflation on an upward path:** Though inflation is still within comfort bands, analysts expect it to reach 5.9% in late 2026, potentially putting a damper on household consumption.
- **Front-Loaded Manufacturing:** Any uptick in production in factories could simply unwind in coming quarters if there is a lack of new impulses for private investment.

Way Forward for Sustainable Growth:

- **Perception and Social Stigma:** Public reluctance (the "yuck factor") to the use of recycled wastewater, even for non-potable applications.
- **Institutional Fragmentation:** No coordination between pollution control boards, urban local bodies (ULBs) and water supply departments.
- **Quality Assurance:** Assure consistent treatment to avoid the possibility of contamination with heavy metals or pathogens in fields and factories.
- **Infrastructure Deficit:** Capital costs are high to construct dual-piping infrastructure to deliver treated water to end-users.

Way Forward for India:

- **National Standardization:** Adopting a common approach to water quality standards, with different standards for various end-use water purposes (e.g., water for landscaping versus water for industrial cooling).
- **Financial Incentives:** Subsidies, viability gap funding and tax rebates for industries investing in SRTW infrastructure.
- **Public Awareness:** Commencing focused communication strategies for building trust and social acceptance of recycled water.
- **Building Bylaw Modifications:** Introducing a building bylaw requiring that new townships in the City be equipped with dual-piping and decentralized greywater recycling.

Source: The Hindu

1.4 Youth Power in Indian Elections

Syllabus: Social Issues [GS 2]

Context:

Youth in elections are a dynamic young demographic that can change the face of democracy, but they are also a powerful electoral force yet to be fully realized.

The Democratic Divided & Electoral Potential:

India has one of the youngest populations in the world, with more than 50 per cent of its population below the age of 25 and over 65 per cent under 35.

- **Millennial and Gen Z voters:** They form a large portion of the electorate, and with their power potentially in their hands in both state and national elections, they will likely prove decisive in influencing election results.
- **Youth Voting:** In contrast to older voters more likely to be loyal or bound by tradition, aspirations of global connectivity, economic mobility, and digitization increasingly influence youth voting.

Why Youth Power is "Still in the Making"?

Despite their massive numbers, young voters have not yet consolidated into a homogenous, predictable political bloc due to several structural and behavioral factors:

1. The Challenge of Voter Registration

- Internal Migration: A large share of the youth migrates internally for education/employment. Transferring voter registration to temporary residences is still a lengthy process.
- Apathy and Inertia: First-time eligible voters often exhibit low registration rates due to a lack of awareness or procedural delays in issuing Voter ID cards.

2. Political Disillusionment vs. Online Activism

- A Digital-Real World Divide: Although young people are active on social media on civic issues, this online action doesn't lead to higher rates of voter turnout at the polling place.
- Political Alienation by Youth: Youth's trust in political institutions is diminishing due to the lack of their issues being addressed in the mainstream political parties.

3. Fragmentation across Identity Lines

- Overlapping Identities: Youth do not vote as a singular class. The basic factors of regional differences, caste, religion and socio-economic status continue to divide their votes.

Core Grievances of the Youth Electorate:

The political narratives that are going to be effective in mobilizing this group must speak to the specific fears of the young today:

- **Joblessness and Job Security:** Most of all, the shortage of formal quality employment and the structural underemployment are a concern, along with frequent paper leaks in the public sector exams.

- **Higher Education Reforms:** Need for low-cost good quality higher education with market ready skills and in the modern gig economy.
- **Quality of Life:** Environmental awareness and sustainability, mental health facilities, civic concerns.

Measures to Harness Youth Electoral Power:

In order to turn the youth into an active electorate, the right institutional and political measures need to be taken:

- **Institutional Enhancements:** The Election Commission of India (ECI) can expand the use of technology such as remote voting or even an easier and simpler online registration window specifically for people who are internally displaced.
- **Lowering the Age of Candidacy:** Reducing the minimum age to contest parliamentary and assembly elections from 25 to 21 could encourage more direct, youthful representation in legislative bodies.
- **Youth-Centric Manifestos:** Populist rhetoric and abstract policies need to be replaced with concrete policies informed by data and focused on youth employment and skill development that are presented by mainstream political parties.

Conclusion:

Today's young people carry the keys to furthering democratic roots and effecting policy changes for the better. But systemic challenges of voter mobility must be addressed and political parties should provide a viable pathway to truly representational politics for their status as an undivided, decisive electorate to become a reality.

Source: The Hindu

1.5 Reforming India's BIT Regime

Syllabus: Polity & Governance [GS 2], Economy [GS 3]

Context:

The government of India is updating its 2015 Model Bilateral Investment Treaty (BIT) to become investor-friendly and increase foreign capital inflows. The framework of 2015 was very strict, because of the high cost of international arbitration cases such as Vodafone and Cairn, which slowed the trade pacts. The draft's forthcoming section called attention to the importance of maintaining a democratic balance to sovereign regulatory space in the process of negotiating treaties.

Background & Context:

- **2015 Model BIT Shift:** Adopted after multiple Investor-State Dispute Settlement (ISDS) claims against India, prioritizing state regulatory power by mandating local remedies first.
- **Budget 2025 Announcement:** Finance Minister Nirmala Sitharaman announced plans to revamp the model during the Union Budget speech to encourage sustained foreign direct investment.
- **Recent Progress:** India inked new investment agreements with the UAE and Israel, reducing the time for litigation to three years from five.

Key Structural Challenges of the 2015 Model:

- **Exhaustion of Local Remedies (ELR):** The 2015 framework required foreign investors to exhaust local remedies for five years before initiating international arbitration. This proved to be a sticking point for countries that export capital.
- **Narrow Investment Definition:** It was changed from an asset-based to an enterprise-based definition, which did not include aspects such as IP rights or pre-investment capital.
- **Taxation Exclusions:** It excluded taxation issues altogether, thereby limiting the protection of investors against retrospective tax changes.
- **Consequence:** India's absolute attitude slowed up the pace of the ongoing mega Free Trade Agreement (FTA) talks with important economic groups such as the UK, the European Union (EU) and Canada.

Key Elements under Revision:

- **Exhaustion of Local Remedies:** The current mandatory five-year domestic litigation requirement before international arbitration is proposed to be cut down to two or three years.
- **Expanding the scope of protection:** Overcoming rigid limits on taxation and limiting the definition of investment to exclude the major capital exporters.
- **Sovereign Safeguards:** An approach that protects key public policy, security and tax areas on a list, with flexibility elsewhere.

Democratic Deficit & Institutional Concerns:

- **Executive Discretion:** Treaties do not have to be laid before Parliament before they can be executed, but may be executed through executive discretion.
- **No Formal Scrutiny:** Stakeholder consultation is at the discretion of the legislature, and calls are being made for a new treaty-scrutiny statute to enhance the accountability of parliamentarians.
- **Bargaining Asymmetries:** During bilateral negotiations, bargaining partners with greater leverage often get themselves to bargain away clauses that restrict rights.

Way Forward:

- **Adopt a Treaty Scrutiny Statute:** An institutional law which requires the executive to submit draft treaties for committee review in Parliament before they are formally ratified in the country should be adopted in India.
- **Structured Stakeholder Consultations:** Ensure that formalized institutional pathways for consultation with State governments, legal experts, industry bodies and civil society exist, since state legislation is frequently affected by BIT provisions.
- **A strategic balancing act:** India should fine-tune its "First Develop India" (FDI) policy to provide clear and transparent legal certainty for foreign companies, while ensuring that it maintains its sovereign powers to intervene for the public good.

Source: The Hindu

2.1 Hanging Glaciers in Himalayas: India's New Disaster Risk

Syllabus: Environment [GS 3]

Context:

Climatic warming and accelerated infrastructure development in the Himalayan region make it more vulnerable to glacier instability, avalanches, Glacial Lake Outburst Floods (GLOFs), landslides and flash floods.

Key Highlights:

- Research in a 2026 paper published in the journal Nature revealed 219 hanging glaciers in the Alaknanda basin in the Garhwal Himalayas, marking a new disaster risk problem in India.
- Hanging glaciers are unstable ice masses that are suspended on steep mountainsides and may suddenly break away and cause large-scale avalanches.
- Increased climatic changes, both in terms of temperature and precipitation, are making the glaciers in the Himalayas more geometrically and dynamically unstable.
- The Himalayas, in particular, have steep slopes, active tectonics, glaciers, glacial lakes and rapidly flowing rivers, making them very vulnerable.
- High Mountain Asia is warming at about double the global average rate, putting additional strain on the region's fragile cryosphere.
- The recent floods in Nepal, and previous events like Chamoli disaster in 2021, illustrate how cascading cryospheric hazards can occur.

How do Hanging Glaciers Form?

- Glacier melting due to climate warming and loss of stability of ice masses on steep slopes.
- Lower snow cover leads to less albedo, or sun-reflecting ability, of the glacier ice, and can make melting more rapid.
- Structural and geometric instability may result from changes in glacier velocity and from ice redistribution.
- Glacier collapse is triggered by earthquakes, heavy rains, sharp shifts in ice and slope movement.
- The ice rock avalanche can reach very high speeds and flow down valleys to villages.

Why are Hanging Glaciers Dangerous?

- Rapid separation of a hanging glacier can create huge avalanche masses that can cause damage to settlements, roads, bridges and hydropower facilities.
- Other secondary hazards that can occur from glacier break-offs are Glacial Lake Outburst Floods (GLOFs).

- The total ice volume of the Alaknanda basin was estimated at 2.39 ± 0.42 km³, of which about 0.74 ± 0.14 km³ of hanging ice was estimated.
- The simulations suggested an avalanche flow of over 50 metres in the Badrinath-Mana sector of Uttarakhand's Himalayas.
- There is also rising exposure due to the encroachment of construction and settlement in sensitive mountain spaces.

Climate Change & Infrastructure:

- Infrastructure development can increase exposure to disasters, and climate change can increase the likelihood of instability of the cryosphere.
- The development of hydropower, roads, tunnels, and tourism facilities in the Himalayas is growing.
- The Chamoli disaster in 2021 highlighted cases of cascading ice-rock avalanches damaging hydropower projects and critical infrastructure.
- The challenge is actually not just climate change but hazard, exposure and vulnerability.

Key Challenges for India:

- There is still a significant concern about limited systematic monitoring of unstable glaciers.
- It is difficult to continuously monitor mountain areas due to tough terrain, and it is costly and technically demanding.
- In some critical areas, early-warning systems for rapidly developing avalanche and GLOF events are still insufficient.
- Construction and tourism may lead to exposure to hazardous areas as a result of unplanned activities.
- Cooperation between India, Nepal, Bhutan and China is essential in the event of the Himalayan hazards crossing the countries' borders.
- Disaster management is still largely reactive, and not anticipatory.

Way Ahead:

- The Indian country should have a holistic glacier inventory with satellite, drone, ground-based sensors and field observations of high-risk glaciers.
- Increase the monitoring of glacier motion, glacial lakes, precipitation, temperature and slope stability in real-time.
- Early-warning systems should be linked between scientific monitoring and district authorities and vulnerable communities.
- Construction in high-risk avalanche and GLOF areas should be kept to a minimum and should be avoided in areas of extreme risk.
- Cumulative environmental and disaster-risk assessments should be performed instead of project-level assessments in hydropower and road projects.
- Himalayan countries need to improve cooperation in sharing information, joint research and coordinated disaster-response systems.
- Technological solutions should be backed up by community-based disaster preparedness, evacuation drills and local awareness.
- To slow climate-driven cryospheric instability, mitigation efforts will need to be stepped up over time to move towards low-carbon development.

Conclusion:

- Hanging glaciers are a larger warning on the evolving cryosphere of the Himalayas.
- India has to move away from the reactive disaster management approach to the proactive risk reduction approach.
- To safeguard the communities of the Himalaya, it is necessary to have scientific monitoring, climate-resilient infrastructure, responsible tourism, and ecosystem-based planning and transboundary cooperation.
- It should not be about predicting all avalanches but about ensuring that there are no avoidable human catastrophes in situations of foreseeable natural hazards.

Source: **The Indian Express**

Mains PYQ:

Q. How will the melting of Himalayan glaciers have a far-reaching impact on the water resources of India? (2020)

2.2 Renewable Energy is Reshaping India's Power Sector

Syllabus: Economy [GS 3]

Context:

India's rapid growth in renewable energy has been reshaping the economics of the thermal power industry, with coal plants increasingly playing a supporting role as flexible backup power stations, while placing new financial constraints on DISCOMs.

Key Highlights:

- The pace of India's renewable-energy growth is not only reshaping the nation's power mix, but also the bottom line of traditional thermal power.
- This is reflected in the latest performance of NTPC, India's largest power generator, which has seen profits rise faster than revenues as renewable energy continues to make inroads.
- NTPC's consolidated PAT stood at ₹27,546 crore in FY2025-26, which is 15% up from the previous year, though revenue from operations (RO) dropped marginally.

Why are NTPC's Profits Rising?

- **The role of fixed charges**
  - The two-part tariff structure, which most long-term thermal power contracts follow, is the key explanation.
  - Fixed capacity charges are levied on thermal power generators to maintain generating capacity on the electricity grid without the need to actually produce electricity.
  - They also get energy charges based on the actual electricity supplied, which include fuel-related costs.
  - So, reducing the use of thermal power does not necessarily translate to a proportional reduction in revenue from the plant, as capacity payments will not stop simply because the plants are not used.
- **Renewables create a new role for coal plants**
  - There is variability in the production of solar and wind power based on weather and time of day.
  - Renewables can thus displace thermal generation when there is a high level of solar or wind generation.
  - But thermal plants are still significant as they can make electricity available when renewable generation is low and demand is high.
  - As a result, coal plants are increasingly being used as backup and balancing plants.

Challenge of Thermal Power Flexibility:

- Thermal power plants need to be more flexible for India's energy transition.
- The Minimum Technical Load (MTL) is a percentage that indicates the lowest load at which a thermal unit can safely and stably run without being shut down.
- Lowering MTL would enable coal plants to reduce their production when renewable generation is high, and ramp up when renewables are low.

- The Central Electricity Authority has laid out a plan to allow the coal-fired plants to run at approximately 40% MTL by 2030, but industry is worried about the extra thermal and mechanical strain on equipment.

Why DISCOMs Face Financial Pressure?

- The financial challenge presented by India's renewable transition is a critical one for electricity distribution companies (DISCOMs).
- DISCOMs may end up paying fixed capacity fees to thermal generators even if they produce less coal-based electricity due to the presence of renewable electricity.
- Meanwhile, a significant share of DISCOM revenues continues to be tied to electricity usage.
- This results in a lack of balance between fairly fixed spending and fluctuating revenue, adding to the financial pressures already felt by many DISCOMs.

Significance for India's Energy Transition:

- The NTPC example shows that no need for conventional energy is lost with the introduction of renewables.
- Rather, India is transitioning to a hybrid power grid that will mix renewables with thermal flexibility, storage, transmission facilities and eventually more nuclear power.
- NTPC's clean-energy expansion demonstrates the company's growing focus on renewable and low-carbon generation, aligning with India's evolving energy security landscape.

Way Forward:

- Expand battery and pumped-storage capacity to reduce thermal dependence.
- Modernise thermal plants for flexible, efficient operation.
- Adopt cost-reflective tariffs while protecting vulnerable consumers.
- Improve DISCOM efficiency, billing, collection and financial health.
- Strengthen transmission, storage and grid-balancing systems.
- Balance energy security, affordability, reliability and decarbonisation.

Source: **The Indian Express**

Mains PYQ:

Q. "Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)".Comment on the progress made in India in this regard. (2018)

2.3 Nepal Floods 2026: Climate Change, Himalayan Dams & Disaster Risk

Syllabus: Environment [GS 3]

Context:

The Nepal floods strengthen the sentiment that the Himalayas are becoming even more vulnerable to climate change, especially in the context of glacial hazards and different development projects, and these underline the requirement for sustainable development and transboundary joint efforts on disaster management.

Key Highlights:

- Earthquakes, landslides and avalanches; Flash floods and Glacial Lake Outburst Floods (GLOFs) are threatening factors for the sensitive mountain ecosystem in the Himalayas.
- The disaster has once again sparked a discussion on the development of hydropower, dams, roads and tourism infrastructure in the Himalayan region within the ecological carrying capacity.

Why are the Himalayas Vulnerable?

- Steep slopes, unstable geology, fast-flowing rivers and extensive glacial systems are all part of the Himalayas, which naturally have multiple and interconnected disaster risks.
- Glacier and snowmelt are also gaining in speed with rising temperatures, leading to chances of glacial lake expansion and sudden water releases.
- In addition to this, the region is very seismically active and earthquakes can cause landslides, avalanches, damage to infrastructure and secondary flooding.
- While detailed scientific attribution is necessary to determine the specific impact of climate change in any one disaster, climate change can exacerbate climate change vulnerabilities.

Climate Change & GOLFs:

- Glacial Lake Outburst Floods are floods caused by a sudden release of water from glacial lakes due to dam failure, glacier collapse, or similar processes.
- Warmer temperatures may decrease snowpack over high-latitude glaciers and expose darker glacier surfaces, increasing the absorption of solar radiation and melting rate.
- The rapid glacier retreat can thus lead to unstable glacial lakes and an increase in risks downstream.
- Satellite monitoring, remote sensing and on-the-ground observation can facilitate the early detection of these events to minimize fatalities.

Himalaya Dam-Building Challenge:

- India, Nepal and Bhutan are among the countries that rely on hydropower for clean energy that provides for their economic development and energy security.

- The construction of large dams affects, however, the geology, natural drainage, road construction and tunnelling in the already sensitive area.
- Sub-optimal infrastructure can result in greater vulnerability to landslides, earthquakes, flash floods, etc.
- Extreme events may cause damage to infrastructure at the same time as they interfere with electricity production and also with local livelihoods.

Development vs. Ecological Sustainability:

- The decision of development in the Himalayas is not an easy one between economic growth and environmental protection.
- The goal should be to build infrastructure that is resilient to climate change, within the ecological limits of mountain ecosystems.
- Cumulative impacts from multiple dams, roads, tunnels and tourism projects should be taken into account in EIAs at the whole river basin level.
- Before making major investments in infrastructure, fragile zones need to be identified by hazard mapping and the use of appropriate land-use legislation.

Transboundary Dimension:

- The rivers run across the borders of the Himalayan nations and the issue of disaster management becomes a joint responsibility of countries such as India, Nepal, Bhutan, China and Bangladesh.
- The sharing of real-time rainfall, river-flow, reservoir-operation and glacial-lake data can be very effective in supporting early-warning systems.
- There is a need for current bilateral and regional arrangements to be widened to include GLOFs and extreme weather events and integrated river basin management.
- Scientific cooperation and joint disaster response training can help with preparedness and mitigate geopolitical distrust.

India's Concerns:

- The impact of the Himalayan disaster on water security, energy security, ecological security and the capacity of disaster management directly impacts the nation of India.
- Some of the states like Uttarakhand, Himachal Pradesh, Sikkim and Arunachal Pradesh are highly vulnerable to mountain hazards.
- It is, therefore, imperative that these aspects of seismic safety, climate projections, slope stability and downstream disaster risks are considered in infrastructure development for the Indian Himalaya.

Way Ahead:

- The risk-sensitive and carrying-capacity based planning of infrastructure should be promoted in India and other Himalayan countries.
- Basin-level cumulative environmental assessments should be used in addition to project-specific environmental clearances.
- Strengthen real-time data-sharing mechanisms for transboundary data on rainfall, river discharge, reservoirs and glacial lakes.
- Monitoring, automatic warning systems and community-based preparedness for disasters should be expanded by using satellites.
- Local communities should be involved in environmental monitoring, disaster preparedness, and infrastructure decision-making.

- The development of the Himalayas should be in accordance with the principle of "development with resilience" and not at the cost of ecological stability.

Conclusion:

The Nepal floods serve as an example of how natural hazards are transformed into a catastrophe when combined with environmental fragility, where infrastructure exposure and lack of preparedness are key factors.

Source: **The Indian Express**

Mains PYQ:

Q. How will the melting of Himalayan glaciers have a far-reaching impact on the water resources of India? (2020)

2.4 India-Kuwait Joint Defence Committee (JDC)

Syllabus: IR [GS 2]

Context:

On August 28, 2026, the inaugural meeting of the Joint Defence Committee between India and Kuwait (JDC) was held in New Delhi. This is the historic event, which represents a significant shift in India-Kuwait relations. The bilateral relationship is evolving from an economy based on oil and manpower to a well-developed and institutionalized strategic defense partnership.

Key Highlights of the Inaugural JDC Meeting:

- **Co-Chairs:** Amitabh Prasad, Joint Secretary, Indian Department of Defence and Brigadier General Raed Alsakran from Kuwait led the dialogue.
- **Institutional Representation:** High level Indian delegation comprising representation from all three Armed Services, Department of Defence Production (DDP), Defence Research and Development Organisation (DRDO), Armed Forces Medical Services (AFMS) and Ministry of External Affairs (MEA) were integrated.
- **Operationalizing Past Pacts:** Operationalizing the Memorandum of Understanding (MoU) on Defence Cooperation was the main goal of the meeting. The agreement was signed by the Prime Minister during his historic visit to Kuwait in December 2024 and the relationship was raised to a Strategic Partnership.

Major Pillars of Defence Cooperation Agreed Upon:

The JDC created a comprehensive plan of action to strengthen partnerships in a variety of strategic areas:

- **Military Training & Joint Exercises:** Enhancing structural professional military education and planning engaging multi-domain staff talks.
- **Industrial Collaboration:** The Emir of Kuwait visited DPSU Bhawan and had an in-depth conversation with DPSUs of the Indian Defense Sector. The goal is to scour the ground for co-production opportunities and get the growing defense industrial exports capability of India on the agenda.
- **Research & Development (R&D):** Working together on technological frames, sharing the Indian DRDO expertise to develop defense technology assets.
- **Military Medicine:** Training and working together on field medicine and military healthcare in the Armed Forces Medical Services' expertise in the field.

Broader Landscape of India-Kuwait Relations:

The defence cooperation is an extra layer on the multifaceted bilateral ties between India and Kuwait.

- **Diplomatic Relations:** India and Kuwait first got diplomatic relations in 1962. Formal diplomatic relations date back to 2026–27, when the year of 65 years of diplomatic relations was celebrated.

- **Energy Cooperation:** Kuwait is an important partner of India's energy security as it provides supply of energy to India which accounts for about 3.5% of India's energy requirements. It is the 6th largest supplier of crude oil and 4th largest supplier of LPG to India.
- **Indian Diaspora:** Indian community is the largest of the expatriate community in Kuwait with about 1 million Indians living and working there.
- **Trade Relations:** Bilateral trade in FY26 was around USD 9.57 billion, of which India's exports were around USD 1.65 billion.
- **Defence Cooperation:** The expanding co-operation in the defence sector provides a strategic and security dimension to India–Kuwait relations, complementing the other areas of co-operation such as energy, trade, people-to-people and more.

Geopolitical & Strategic Significance:

- **"Look West" and "Act West" Policy Realignment:** Institutionalization of defence relations is in sync with India's active security presence in the Gulf region. This move moves beyond just transactions between the buyer and the seller, and India establishes itself as a solid regional security partner through military-to-military interactions.
- **Maritime Security and Countering Volatility:** West Asia is still under the threat of geopolitical volatility and disruption of maritime trade lines. A formal defense alliance between the two countries enables them to work together to protect key Sea Lines of Communication (SLOCs) in the western Indian Ocean and Persian Gulf.
- **Counterbalancing Geopolitical Competitors:** The JDC meeting followed a defense protocol signed between Kuwait and Pakistan in Islamabad. India's fast-paced diplomacy is aimed at keeping regional strategic balance and its interests at the forefront of the Gulf Cooperation Council (GCC) states.
- **Enhancing Defense Export Footprint:** Through targeted industry interactions at DPSU Bhawan, India aims to transform itself from a primary defense importer into an exporting hub. The Defence platforms have immense potential in the Gulf countries as part of their diversification of strategic partnerships.The indigenous Indian Defense platforms have a huge market in the Gulf countries, as part of their diversification of strategic partnerships.

Source: ET Governance

UPSC Practice Question:

Q. In light of evolving geopolitical dynamics in the West Asian region, examine the strategic significance of the India-Kuwait Joint Defence Committee (JDC).

2.5 India-Uzbekistan Comprehensive Strategic Partnership

Syllabus: IR [GS 2]

Context:

During Prime Minister Narendra Modi's visit to Tashkent in August 2026, India and Uzbekistan took the relationship to the next level, with the governments announcing a Comprehensive Strategic Partnership. Both countries agreed to target USD 5 billion of bilateral trade by 2030 and agreed on a long-term framework for the supply of civilian uranium.

Key Highlights of the Bilateral Meet:

The bilateral relations were enhanced to Comprehensive Strategic Partnership, indicating a commitment to comprehensive institutional coordination in areas of defense, trade, energy, and digital economy.

- **Ambitious Trade Target:** Both leaders set a joint target of USD 5 billion in bilateral trade per year by 2030, aiming for a historic increase to overcome the small scale of the trade.
- **Uranium Supply Framework:** A long-term structured agreement to supply natural uranium concentrate to India from Uzbekistan was launched, which is important for achieving India's clean energy targets.
- **Institutional Overhaul:** The two countries agreed to establish a "Foreign Ministers' level" Coordination Council and to elevate the status of the Intergovernmental Commission to an increased ministerial level to keep track of and evaluate agreements as well as to implement them.

Core Pillars of Cooperation:

Strategic and Defense Cooperation

- Counter-Terrorism Alignment: Both countries signed up to a 'zero tolerance' approach to cross-border terrorism, radicalisation and transnational crime, committing to strengthening military training exercises such as Dustlik.
- Military Hardware: It was agreed that a conventional buyer-seller model would be changed to a co-development and co-production of military hardware, creating direct business relationships between the defense industry and other industry sectors.

Energy Security and Critical Minerals

- Nuclear Fuel Security: Uzbekistan is one of the world's biggest producers of uranium and has signed a long-term uranium agreement, giving India much-needed fuel security for its domestic civilian nuclear reactors under the watch of the International Atomic Energy Agency (IAEA).
- Geological & Mineral Exploration: An MoU on cooperation in mining and geological resources was signed to facilitate the joint exploration of the important critical minerals like copper, lithium and cobalt.

Economic, Digital, and Connectivity Linkages

- Digital Public Infrastructure (DPI): The discussions under this theme were centered around expanding India's fintech achievements, their connection to the Unified Payments Interface (UPI) system, and opening it up to the financial system in Uzbekistan.

- Overcoming Connectivity Bottlenecks: To navigate the geographical challenge of Central Asia being landlocked, both nations emphasized utilizing the International North-South Transport Corridor (INSTC) and optimizing the Chabahar Port in Iran.

Geopolitical Significance for India:

- **Central Asian Pivot:** Uzbekistan is the geographical and economic centre of Central Asia. The development of the relationship between the two cities is a step towards implementation of India's "Connect Central Asia" policy and helps to counterbalance other regional stakes.
- **Strategic Autonomy:** India's access to long term energy raw materials is reducing India's reliance on conventional and volatile supply chains and hence ensuring energy independence and energy economic security.
- **Regional Stability:** Both countries have distinct geopolitical interests in a peaceful, inclusive and stable state mechanism in Afghanistan to neutralize religious extremism's spillovers in the region.

Source: **The Indian Express**

UPSC Practice Question:

Q. Examine the significance of the India–Uzbekistan Comprehensive Strategic Partnership, with particular reference to trade, energy security and India's strategic interests in Central Asia.

2.6 Baltic Way: Gandhian Satyahgraha & the fall of Soviet Rule

Syllabus: History [GS 1]

Context:

The Baltic Way, a historic peaceful demonstration held on August 23, 1989, stands as one of the most powerful examples of non-violent resistance in modern history. Approximately two million people formed a continuous human chain stretching 675 kilometers across the three Baltic states: Estonia, Latvia, and Lithuania. This monumental protest, drawing inspiration from Mahatma Gandhi's philosophy of Satyagraha, directly accelerated the collapse of Soviet totalitarian rule and the restoration of independence for the Baltic nations.

Historical Context & Background:

- Fifty years earlier, before the protest, a secret protocol had been signed between Nazi Germany and the Soviet Union dividing up Eastern Europe (The Molotov-Ribbentrop Pact, 1939). This led to the forced illegal annexation of the Baltic states by the USSR.
- In the late 80s, with Soviet leader Mikhail Gorbachev's policies of Glasnost (openness) and Perestroika (restructuring), the national movements had an opportunity to openly demand the release of the secret protocols of 1939.

The Influence of Gandhian Philosophy:

The organizers of the Baltic resistance consciously adopted Gandhian principles to counter a heavily armed superpower.

- **The principle of Satyagraha (Truth-Force):** This was the central one – which involved exposing the historical untruth of the Soviet annexation. The Baltic were revealing the secret pact – the moral truth as a political weapon which could not be overcome.
- **Ahimsa (Non-violence):** Even when the military provocation was great and oppressed for decades, the movement adhered to the rule of absolute non-violence. Peace, unity, and a refusal to cooperate with injustice were represented by the human chain.
- **The Singing Revolution:** Paralleling Gandhi's use of devotional songs and community prayers to build national solidarity, the Baltic nations used their rich heritage of choral singing to peacefully express defiance, a phenomenon known as the "Singing Revolution."

Key Features of the Baltic Way:

- **No. of People Mobilized:** One-third of the total population of the three states mobilized at the same time.
- **Geographical Span:** The chain linked the three capital cities: the city of Tallinn (Estonia), the city of Riga (Latvia) and the city of Vilnius (Lithuania).
- **Internationalization:** The demonstration attracted international media coverage, to the point that the Soviet government was forced to admit officially the existence of the Molotov-Ribbentrop Pact and declare it invalid.

Global & Geopolitical Impact:

- **Collapse of the Soviet Bloc:** The success of the Baltic Way galvanized freedom movements across Eastern Europe, ultimately culminating in the fall of the Berlin Wall later in 1989 and the dissolution of the Soviet Union in 1991.
- **Independence was recognized:** By 1991, the international community officially acknowledged the restored sovereignty of Estonia, Latvia and Lithuania.
- **UNESCO Inscription:** The documentation of the Baltic Way was added to the UNESCO Memory of the World Register in 2009, thus recognising its worldwide significance.

Source: The Hindu

UPSC Practice Question:

Q. Examine the influence of Gandhian Satyagraha on the Baltic Way and the fall of Soviet rule.

2.7 India-Iran Ties: Chabahar, Hormuz & the Road Ahead

Syllabus: IR [GS 2]

Context:

During the Shanghai Cooperation Organisation (SCO) meeting in Bishkek, India's Prime Minister, Narendra Modi, met Iran's President Masoud Pezeshkian and discussed the importance of Indo-Iran relations amidst the current West Asian instability.

Key Highlights:

- India reiterated its wish for dialogue and diplomacy, freedom of navigation, protection of citizens, and uninterrupted commercial trade.
- The meeting took place as the US and Iran re-escalated tensions and military exchanges after a tenuous ceasefire concluded two months ago.
- PM Modi voiced concern over the escalation and said issues should be addressed through peaceful negotiations.
- Iran, meanwhile, tried to engage India to play a role in fostering peace and preventing any further escalation in the region.
- The developments highlight India's increased stature as a nation that can communicate simultaneously with different stakeholders in a highly polarised geopolitical scenario.

Why Strait of Hormuz Matters to India?

- A vital route in energy trade, the Strait of Hormuz is one of the most important straits in the world.
- Changes in navigation traffic in the strait may cause a rise in oil and gas prices globally and inflationary pressure.
- India is also a highly dependent country for crude oil imports, particularly due to long disruptions to energy supply routes from West Asia.
- In this context, India's approach of "Freedom of Navigation, Freedom of Commerce" is a diplomatic approach and an economic interest.

Strategic Importance of India-Iran Relations:

- **Chabahar Port**
  - Chabahar Port is the center of India's policy of connectivity towards Iran, Afghanistan, and Central Asian countries.
  - The port will provide an alternative route to Afghanistan and the rest of the Eurasian region for India, which will reduce its dependency on a Pakistani route.
  - Ongoing collaboration in Chabahar would help enhance India's presence in the region of connectivity and further help in the development of the International North-South Transport Corridor (INSTC).
- **Trade and Connectivity**
  - Iran has a strategic location between South and Central Asia, the Caucasus and West Asia.

- Better cooperation in transporting goods, shipping, and logistics would help India to strengthen its connectivity with Central Asian landlocked economies.
- But on the other hand, sanctions and geopolitical tension continue to be significant limitations in expanding bilateral economic relations.

India's Strategic Balancing Act:

- India has long ties with Iran, Israel, the United States,s and Gulf countries, es and thus strategic balancing is essential.
- New Delhi aims to defend the country's interests without getting entangled in regional conflicts.
- The policy of strategic autonomy is reflected in India's policy, wherein it aims to connect with different powers according to the needs of the hour for the country.
- Last but not least, India's ties with Iran illustrate that in a period of geopolitical strain, Indian diplomacy is more interested in talking than fighting.

Challenges:

- India's economic engagement with Tehran may be troublesome in case there is a confrontation between Washington and Tehran.
- Possible sanctions are those relating to bilateral trade, banking, insurance and shipping, and investment.
- Restrictions in the Strait of Hormuz are a threat to India's energy security and sea trade.
- Regional conflicts may also pose threats to Indian citizens, Indian communities overseas, and commercial shipping.
- Maintaining a balance between ties with Iran and India's strategic partnership with the United States and Israel is politically knotty.

Way Ahead:

- The traditional method of India of dialogue, diplomacy and peaceful resolution of the issues of the West Asian countries should be continued.
- New Delhi should strengthen its maritime cooperation and ensure adherence to international rules and regulations of freedom of navigation and commercial shipping.
- India needs to expedite the progress of Chabahar port and INSTC to diversify connectivity options.
- The diversification of suppliers, strategic petroleum reserves, and greater investment in renewable energy should help improve energy security.
- Multilateral dialogues and peace should be promoted on platforms such as SCO and BRICS in India.
- High-level engagement with Iran can be key to maintaining strategic space and protecting India's economic and connectivity interests of India.

Conclusion:

- India-Iran relations are not limited to bilateral diplomacy; they have a wide range of other interests including energy security, connectivity, maritime trade and stability in the region, which the Modi-Pezeshkian meeting has highlighted.

- In this context, India's focus on dialogue, freedom of navigation and peaceful dispute resolution has been in keeping with its overall foreign-policy of strategic autonomy.
- Balancing Iran with other big countries is crucial for India to ensure its interests in a fiercely competitive West Asia.

Source: **The Indian Express**

Mains PYQ:

Q. "India's relations with Israel have, of late, acquired a depth and diversity, which cannot be rolled back." Discuss. (2018)

2.8 Strengthening Financial Cybersecurity against AI-Driven Threats

Syllabus: Science & Tech [GS 3]

Context:

The Indian financial regulators are bolstering their cyber defenses against sophisticated and AI-empowered threats, multi-state digital frauds, and vulnerabilities in interconnected IT networks. Bodies such as the RBI and SEBI have been compelled to shift from periodic checks to real-time defensive mandates due to recent intrusions into banking systems and scalable DeepFake attacks.

Drivers of Increased Regulatory Scrutiny:

1. Proliferation of Generative AI Fraud

- Deepfakes & Voice Cloning: Improper use of advanced generative AI to replicate voices and facial telemetry.
- Identity Theft: They can evade conventional video Know Your Customer (KYC) standards and biometric liveness verification employed by fintech companies.

2. Systemic Scale of UPI and Digital Payments

- Expanded Attack Surface: The massive volume of real-time transactions under the Unified Payments Interface (UPI) expands the potential vulnerability points.
- Lack of Manual Defenses: They are a scale of anomalies that human security teams can no longer monitor and flag manually.

3. Critical Infrastructure Vulnerabilities

- Direct Infiltrations: Multiple confirmed security breaches across several Indian banks have exposed structural vulnerabilities.
- Systemic Risk: Isolated IT errors can quickly snowball into potential macroeconomic sector threats due to highly interconnected settlement networks.

Key Regulatory & Policy Responses:

- **Comprehensive Frameworks:** The Reserve Bank of India rolled out new guidelines for the structures of the institutions, including the notion of a "kill switch" during a fraud in live mode to freeze the account.
- **Inter-Agency Coordination:** Collaborative oversight bridges the Ministry of Electronics and Information Technology, the Department of Financial Services, and the Indian Cyber Crime Coordination Centre (I4C) to remove information silos.
- **Proactive Surveillance:** AI-powered internal surveillance models are used to identify abnormal trade and financial data patterns in advance, before breaches occur.

Persistent Challenges in the Financial Cyber Ecosystem:

- **Third-Party Concentration Risks:** Banks are heavily dependent on third-party cloud providers, shared data centers and niche financial technology APIs. If one vendor suffers from an outage, several institutions can be affected at the same time.

- **Self-Computed Metrics:** Systemic tracking using frameworks such as ITRI is dependent on the data that is self-computed, and this can pose risk of "too good to be true" internal scoring without external validation.
- **Cross-Border and Multi-State Litigations:** Financial cybercrimes thrive across borders and across state jurisdictions making them difficult for police to trace, legal to recover assets and mule account networks to find.

Way Forward for India:

- **Zero-Trust Architecture:** Ensure constant identity verification, not just perimeter protection, for all banking networks.
- **Quantum-Resistant Encryption:** Make cryptographic public infrastructure resistant to future computational advances.
- **Indigenous Solutions:** Scale up AI threat detection initiatives in the domestic production under "Make in India".

Source: The Indian Express

UPSC Practice Question:

Q. Examine the cybersecurity challenges posed by AI-driven threats to India's financial sector. How can real-time regulatory mechanisms strengthen financial cyber resilience?

2.9 One Nation One Time: India's New IST Rules

Syllabus: Geography [GS 1]

Context:

New Legal Metrology (Indian Standard Time) Rules, 2026 aim to establish IST as the only legal time reference in the country.

Key Highlights:

- The Legal Metrology (Indian Standard Time) Rules, 2026 are a significant measure towards the realization of "One Nation One Time" by fixing Indian Standard Time (IST) as the only time reference for administrative, legal, commercial and official purposes in India.
- The initiative is important not because it is a change in the time zone for India, but because it aims at providing a common and traceable time reference to government departments, business and critical infrastructure.

Why India Needs One Standard Time?

- India is already on IST (UTC +5:30), with CSIR National Physical Laboratory (CSIR-NPL) being the custodian of the country's official time reference.
- An authorised and traceable IST reference must be used by time-dependent systems in government and critical sectors as per the new rules.
- Organizations have 180 days from notification to conform with the new requirements.
- It is part of India's strategy for establishing a reliable domestic timing facility and decreasing reliance on external timing sources.

What is White Rabbit Technology?

- The technology behind White Rabbit is an open-source technology that will synchronise computer clocks with very high precision across fibre optic networks.
- It is a measurement of how long it takes for signals to pass between systems and corrects for delays in transmission.
- The technology was first created at CERN for scientific experiments that needed precise coordination between thousands of devices.
- The dissemination of official IST from national reference systems to critical infrastructure is being demonstrated in India using White Rabbit technology.

Why Precise Time Synchronisation Matters?

- **Financial Sector**
  - The accuracy of time and date is very critical on a stock exchange, where transactions may take place in a matter of seconds.
  - Time of execution also establishes the order of trades and orders, and can be used to help regulators track suspicious activity or prove a trade transgression.

- **Telecommunications and Cybersecurity**
  - Having consistent timestamps allows investigators to join the logs of the servers located on different networks.
  - The precise time of events can aid in establishing the order of events in cyber incidents and determine what cyber systems or users were in operation during a specific time.
- **Power & Critical Infrastructure**
  - Complex systems such as electricity networks, transport, and others must operate in a coordinated manner.
  - A common time reference enhances synchronisation, fault analysis and emergency response.
- **Defence and National Security**
  - Resilient and robust timing infrastructure needed for critical defence systems.
  - A single external timing source can lead to vulnerabilities when there is jamming, spoofing or geopolitical disruption.

India's Strategic Push for Domestic Timing Infrastructure:

- India's native satellite navigation system, ISRO's NavIC, offers domestic positioning, navigation and timing services.
- An alternative approach to the distribution of high-accuracy IST is through fibre-based systems like White Rabbit.
- Having multiple timing sources can help to be more resilient, in the sense that if one timing source is affected or disrupted, the system may not be affected.

Challenges:

- Older computer systems might need significant technological modernisation to meet the new framework.
- For smaller businesses and institutions, financial and technical hurdles might exist when it comes to precision timing systems.
- Redundant timing sources and regular calibration are required for critical infrastructure, along with cybersecurity protection.
- In India, the digital infrastructure is very diverse and multiple regulators and institutions will need to coordinate to ensure uniform implementation.

Way Forward:

- A national time-synchronisation architecture for connecting CSIR-NPL, NavIC and terrestrial time-synchronisation networks should be developed to be interoperable in India.
- To minimize the risk of disruption in critical infrastructure, redundant and resilient timing sources should be maintained.
- A uniform set of technical standards should be developed by government agencies and compliance should be regularly monitored.
- Funding indigenous timing technologies can further bolster India's digital sovereignty, cybersecurity and strategic autonomy.
- There should be a step-by-step modernization of the outdated systems and training of technical manpower for precision timing infrastructure in public and private institutions.

Conclusion:

- The One Nation One Time initiative reveals that time is not just a timepiece and a calendar, but a key ingredient in a modern digital economy.
- Effective dissemination of ISTs can enhance the strength of financial markets, telecom, critical infrastructure and national security in India.
- With these capabilities, India can create a resilient and strategically independent national timing ecosystem that will integrate CSIR-NPL's national time reference with fibre-based technologies like White Rabbit.

Source: **The Indian Express**

Mains PYQ:

Q. Why is the Indian Regional Navigational Satellite System (IRNSS) needed? How does it help in navigation? (2018)

2.10 Distinguished Jurist in Supreme Court

Syllabus: Polity [GS 2]

Context:

Article 124(3) allows appointment of a distinguished jurist as a Supreme Court judge, but it has never been invoked in more than 76 years, which has raised concerns about diversity, legal academia and collegium system of appointment to the higher judiciary.

Key Highlights:

- Three pathways are provided under the Constitution of India for the appointment of judges to the Supreme Court, namely as High Court judges for five years, advocates for ten years, or as a "distinguished jurist" in the opinion of President.
- The distinguished-jurist track has never been followed to fill Supreme Court seats, more than 76 years after the Constitution went into effect.
- Supreme Court Justice Ujjal Bhuyan recently said, "This is an unused mandate," and opined that the appointment of eminent judges might help in diversifying the Bench and also improve the engagement of the Bench with the complex public-law issues.

What is a Distinguished Jurist?

- A distinguished jurist may refer to a person who has served in the legal profession, regardless of courtroom practice, who has remarkable scholarship, research or contribution in the area of law.
- It provides a forum for judges to seek out legal scholars and constitutional experts and their insights, and not just the insights of practising lawyers and judges.
- The motivation behind the provision was the notion that highly minded lawyers can make a significant contribution to constitutional adjudication without having undertaken a conventional judicial or litigation career.

Constitutional Background:

- This Article addresses the formation and membership of the Supreme Court and lays down the qualifications for the appointment of Supreme Court judges.
- In the debates of the Constituent Assembly, H V Kamath had contended that judges and advocates should not be the only ones to be considered for the pool of candidates.
- He advocated for the appointment to higher courts of people with exceptional legal and juristic knowledge.
- Dr. B R Ambedkar did not object to the principle, but did question the exact choice of words, especially the word "distinguished."
- The provision was eventually included in the Constitution.

Why has the Provision Remained Unused?

- **Dominance of the Traditional Judicial Pipeline**
  - Traditionally, judges appointed to the Supreme Court hailed from High Courts, followed by appointed senior advocates from the Bar to a lesser extent.
  - Outside the legal professions, academics and jurists have hardly been considered, however, in traditional roles.
- **Absence of a Clear Definition**
  - The Constitution doesn't exactly specify what is meant by the term "distinguished jurist."
  - This leads to doubt about objective measures of scholarly contribution, constitutional expertise, legal publications, teaching, research and contributions to legal development.
- **Collegium System**
  - In the existing system of appointments, the Supreme Court Collegium recommends the name of the judge to the appointment process, which then goes through the constitutional procedure.
  - The legal scholar, therefore, would not be able to just apply for appointment under Article 124(3); he would first have to be identified and recommended in the existing judicial-selection mechanism.
- **Separation between academia and practice**
  - Under general rules of the Bar Council, full-time law teachers are not allowed to practice at the same time.
  - Such a division can hinder the practitioner's ability to gain courtroom experience that is regarded as essential for higher office.
- **Limited Institutional Exploration**
  - What other option is there, Justice Ujjal Bhuyan asked, "Or maybe it was not seriously thought upon by the successive governments, and the judiciary, either?"

Why is the Provision important?

- Diversity in the judicial bench: It could diversify the Supreme Court's Bench in terms of professional and intellectual background.
- Constitutional expertise: Constitutional law, human rights and comparative jurisprudence specialists might offer specialized views.
- Public-law adjudication: Expert judges can be involved in complex issues of constitutional interpretation, federalism, rights and government.
- Historically, there have been several jurisdictions around the world that have allowed for exceptional legal scholarship and expertise as a basis for appointment.
- Knowledge-driven judiciary: There is a need to improve the relationship between judicial practice, research of law and constitutional theory through more involvement of legal scholars.

Challenges & Concerns:

- It would be necessary to have objective and transparent criteria to determine who a distinguished jurist is.
- Too much discretion might raise issues of political pressure or arbitrary picking.
- Experience in court is still relevant, especially as a litigator, in the examination of evidence, procedure and realities of the courtroom.

- Thus, academic distinction alone should not be considered as enough for judicial appointment.

Way Forward:

- Supreme Court collegium and the government should take note of the provision, which otherwise languishes in Article 124(3) of the Constitution.
- Sustained contributions to constitutional law, jurisprudence and legal scholarship, as well as to the development of public law, could serve as the basis for a set of transparent criteria.
- There could be a greater level of identification through a wide consultative process with judges, senior advocates, legal academics and constitutional experts.
- The more that law schools, courts and the Bar work together, the less there will be a gap between legal scholarship and the practice of law.
- An appointment should ensure judicial independence, institutional integrity and constitutional accountability.

Conclusion:

- The distinguished-jurist provision is an important constitutional experiment that is designed to make the Supreme Court more inclusive.
- The fact that it has not been used for 76 years does not necessarily mean failure by the institutions, but it does question whether the design of the Constitution is being used to its full extent in India.
- The appointment of an appropriate distinguished group of judges might ensure greater diversity in the Supreme Court, greater expertise and constitutional sophistication — if the process is open and free from bias.

Source: **The Indian Express**

Mains PYQ:

Q. Critically examine the Supreme Court's judgement on 'National Judicial Appointments Commission Act, 2014' with reference to appointment of judges of higher judiciary in India. (2017)

2.11 Himalayan Disaster: Need for Anticipatory Preparedness

Syllabus: Disaster Management [GS 3]

Context:

It is no less than a paradigm shift from the conventional concept of disaster management to anticipatory preparedness, which can be well illustrated by recent disasters in the Himalayas, such as devastating rock-ice avalanches and flash floods.

Key Highlights:

- With increasing temperatures, glaciers, ice masses, permafrost and mountain slopes are increasingly unstable and can cause cascading and complex hazards.
- The difference between being well-prepared and well-monitored, and not being prepared or not being monitored, can be exemplified by the two avalanche disasters in 2021 in India (Chamoli) and in Switzerland (Blatten).

Understanding Cascading Himalayan Hazards:

- Disasters in the Himalaya cannot be viewed merely as landslides, avalanches and floods.
- A rock-ice avalanche is capable of quickly picking up water, sediment and boulders and becoming a serious debris flow or flood.
- These domino events may result in several kilometres downstream and may impact communities, roads, bridges, hydropower, etc.
- Therefore, the entire hazard chain from the source unstable slope to the areas of exposure needs to be considered in disaster-risk assessment.

Why is the Himalayas Particular Vulnerable?

- **Climate Change**
  - Glaciers, snowpacks, permafrost, and mountain slopes are becoming less stable due to global warming.
  - If the temperature increases, the bond between the ice and rock will be decreased, further contributing to slope failure conditions and cascading hazards.
- **High Infrastructure Exposure**
  - The building of roads, hydropower developments, tunnels and settlements has happened so quickly in the fragile mountain valleys that people are becoming more exposed to natural hazards.
  - Infrastructure along river channels and avalanche/debris-flow paths can aggravate potential loss caused by disaster.
- **Difficult Terrain**
  - Monitoring in the Himalayas is extremely difficult, especially continuous monitoring, due to the rocky terrain.
  - In the event of an emergency, it might be delayed because of the distance, lack of connection and absence of evacuation routes.

From Disaster Reponses to Anticipatory Action:

- Changes in potentially unstable slopes and other changes can be monitored through the use of satellites, which will detect progressive deformation.
- Multi-year satellite data can be used to screen the region to identify sites requiring a detailed investigation.
- But satellites cannot predict all slope failures, they do need to be used in conjunction with ground-based monitoring and scientific assessment.
- The following model of preparedness is proposed: regional satellite screening – identification of susceptible and exposed sites – intense monitoring on the ground – scientific interpretation – early warning – evacuation and response.

Early Warning Must Lead to Action:

- Observations must be linked to clearly defined decisions to save lives.
- Authorities need to set up warning thresholds based on site-specific information, clearly designate authority and set up sound communication systems.
- Communities downstream of slopes that are a risk should have an evacuation plan to shelters and regular disaster drills.
- Communities need to be a part of disaster preparedness since in case of remote mountain disaster, they will be the first responders.

Transboundary Cooperation:

- Political boundaries do not matter in the context of the occurrence of cryospheric hazards in the Himalayas.
- The most significant aspect of glacier and avalanche disasters is that they can easily be passed on to another country via common river systems in an upstream area.
- Hence, it is essential to improve the transmission of hydrological information, satellite observations, and joint research and communication for emergencies in India, Nepal, Bhutan and China.
- Cooperation on disaster management should be a part of regional cooperation within the South Asian region, and be considered as a key component of transboundary disaster management.

Way Ahead:

- A multi-hazard architecture for early warning via satellite, drones, ground sensors, weather data and hydrological observations is needed for India in the Himalayas.
- Planning of infrastructure should consider hazard mapping, avoiding high risk avalanche, landslide and flood paths.
- The responsibility for implementing impact-based early warning systems, and not just predicting the disaster should be the government's.
- Before implementing it, scientific institutions need to have a multidisciplinary approach to creating a disaster cause and/or process.
- Greater preparedness and evacuation facilities in the community, emergency communication and Climate Resilient Building.

Conclusion:

- To warm up the Himalayas, there is a need to move away from a reactive approach to a proactive approach in disaster preparedness and response.
- Although it cannot be guaranteed that all avalanches and landslides can be predicted, risk mapping and monitoring, early warning and timely evacuation can prevent predictable hazards from turning into human disasters.
- Climate science, technology, disaster-resilient infrastructure, community engagement and transboundary collaboration should, therefore, be integrated to protect lives and livelihoods in the context of disaster management in the Himalayas.

Source: **The Indian Express**

Mains PYQ:

Q. Describe the various causes and the effects of landslides. Mention the important components of the National Landslide Risk Management Strategy. (2021)

2.12 Bihar-Jharkhand Sone Water Dispute

Syllabus: Polity [GS 2]

Context:

Inter-state water dispute over the allocation of water, reservoirs and irrigation projects has been resolved between Bihar and Jharkhand for the Sone River through a Memorandum of Understanding (MoU) signed by the two states for 25 years of water dispute.

Key Highlights:

- The new agreement will provide Bihar with 5.75 million acre-feet (MAF) of Sone water while Jharkhand will get 2 MAF, ensuring a more predictable water management framework.
- The settlement has special importance for cooperative federalism, inter-state river-water management, irrigation development and resilience against drought in the eastern Indian territory.

Why did the Sone Water Dispute Arise?

- The controversy arose when Jharkhand was split out of Bihar in November 2000, with the upper catchment areas of the Sone River in Jharkhand and large tracts of agricultural land in Bihar.
- The Bansagar Water Agreement of 1973 had provided 7.75 MAF of water from the Sone to undivided Bihar, but post-bifurcation there was no mutually accepted formula for sharing the same between Bihar and Jharkhand.
- Water allocation, water levels, submergence of land, rehabilitation needs and irrigation needs were then disputed.

What does the New Agreement Provide?

- **Water Allocation**
  - Under the new arrangement, Bihar will get 5.75 MAF of Sone water and Jharkhand 2 MAF of Sone water.
  - The pact would help agricultural areas that rely on the Sone river system.
- **Irrigation and Reservoir Development**
  - The agreement is likely to help utilise Indrapuri barrage and the huge network of Sone canals in Bihar.
  - The canal system plays a significant role for the agricultural districts like Rohtas, Bhojpur, Buxar and Kaimur.
  - The new canal network and water availability are expected to benefit Jharkhand in drought-prone areas in Palamu and Garhwa districts.
- **Addressing Displacement Concerns**
  - With a goal of minimising submergence of lands in Jharkhand, negotiated water levels in reservoirs have been proposed.
  - The agreement also includes provisions for rehabilitation for affected communities—an attempt to balance development with social and environmental issues.

Why is the Settlement Important?

- **Cooperative Federalism**
  - The agreement is a sign that conflicts that have been ongoing between two or more states can be resolved by negotiating, coordinating through institutions and political consensus instead of prolonged conflict.
  - It encourages the spirit of "cooperative federalism" as embodied in the Constitution, especially in regard to the use of natural resources that straddle state lines.
- **Agricultural Development**
  - Stable irrigation will enhance productivity in the droughty areas of both states.
  - Improved water supply could lessen reliance on unreliable monsoon rains and enhance food security and rural livelihoods.
- **Drought Resilience**
  - Water stress is a recurring phenomenon in Palamu, Garhwa (Jharkhand) and some districts of South Bihar.
  - Enhanced water resources and waterways can improve regional water security and climate resilience.

Role of the Central Water Commission:

- Central Water Commission (CWC) has also contributed significantly in terms of technical assistance with hydrological studies and technical frameworks and modified reservoir specifications.
- It facilitated the discussion and resolution of issues on reservoir levels, availability of water and the possibility of submergence of land.
- The case illustrates the role of scientific and technically knowledgeable institutions for resolving complex inter-state resource disputes.

Broader Significance for India:

- There are several inter-state river disputes in India, including Cauvery, Krishna, Ravi-Beas and Mahanadi.
- The Sone settlement is a good example of the need to marry up hydrological information, negotiated allocations, environmental protection and rehabilitation.
- River conflicts must be approached from a basin perspective, and not just as state vs. state conflicts.

Way Ahead:

- Hydrological data-sharing and water accounting should be rolled out in transparent mechanisms at the state level and be done in real time.
- Climate variability, changing rainfall patterns and downstream ecological needs should be included in reservoir operations.
- The rehabilitation and compensation needs should continue to be a key element of land acquisition and submergence projects.
- The Centre should reinforce the institutions, namely, the Central Water Commission, in mediation and water governance through evidence.
- The success of the agreements should be enshrined in proper monitoring systems to ensure that settled disputes are not opened up again by political changes.

Conclusion:

- The Bihar-Jharkhand water dispute, which has been unresolved for 25 years, was finally resolved by persistent negotiations, technical solutions and political Goodwill.
- If done transparently, equitably and in an environmentally sustainable way, the agreement can be a good model of cooperative federalism and integrated river-basin governance.

Source: **The Indian Express**

Mains PYQ:

Q. Constitutional mechanisms to resolve the inter-state water disputes have failed to address and solve the problems. Is the failure due to structural or process inadequacy or both? Discuss. (2013)

2.13 India-Pakistan Water Dispute: The Road Ahead

Syllabus: IR [GS 2]

Context:

The Indus Waters Treaty, 1960, between India and Pakistan has been in "abeyance" since India began building the Ratle Hydroelectric Project in Jammu and Kashmir, and is now in a new state of uncertainty after the Permanent Court of Arbitration (PCA) issued orders in this regard.

Key Highlights:

- India has refused to accept the arbitration process, saying the "court" was set up "in violation" of the treaty and that other dispute resolution processes could not be held in parallel.
- The developments have brought about a resurgence of doubts on the future of water relations between India and Pakistan, transboundary river governance and water security in South Asia.

About Indus Waters Treaty:

- In 1960, the IWT was signed with the World Bank as a signatory, where the three eastern rivers (Ravi, Beas and Sutlej) were allocated primarily to India; and the three western rivers (Indus, Jhelum and Chenab) were allocated primarily to Pakistan.
- India still owns some rights over the western rivers even after the allocation, such as the right to use them for domestic purposes, irrigation rights and hydropower generation as per the treaty terms.
- The treaty also established the Permanent Indus Commission and established procedures for the resolution of technical and legal disagreements.

Why is the Treaty under Strain?

- **Dispute over Arbitration**
  - India threw its weight behind the arbitration process under the treaty and stated that the arbitration process was established in breach of the treaty.
  - India says a Neutral Expert is already there to review the technical issues and such parallel proceedings are contrary to the dispute-resolution mechanism in the treaty.
  - The PCA, however, has gone ahead with the proceedings and handed down orders regarding the treaty and the Ratle project.
- **India's "Abeyance" Decision**
  - India has kept the treaty "in abeyance" even though it does not explicitly call for such unilateral suspension in the treaty itself.
  - India has argued that the decision is still binding and the arbitration proceedings are not valid.
  - The shift is far from what the treaty has traditionally worked in a period of India-Pakistan wars.

Strategic Significance for India:

- India is trying to exploit its "justifiable rights" over the western rivers by generating hydropower and building water infrastructure.
- Around eight infrastructure projects worth nearly ₹50,000 crore are being pursued in Jammu and Kashmir.
- Projects like Ratle are of strategic significance because they can contribute to improving electricity production, water efficiency and regional development.
- But the schemes involving inter-basin transfer, like diversion of water from Chenab for Beas etc., pose new questions since such transfers are not allowed under the existing treaty framework.

Implications for Pakistan:

- Pakistan is still heavily reliant upon the Indus River system for agricultural purposes, drinking water, and economic activity.
- A significant alteration of the flow of water might have significant consequences on food security, irrigation and energy security.
- But the uncertainty over the treaty does not mean India will not continue water supply for Pakistan.
- The water crisis in Pakistan is also associated with inefficient irrigation, depletion of groundwater sources in the ground and lack of water storage facilities, and poor water management.

Broader Implications:

- The conflict highlights the conflict between sovereignty, national security, and international treaty commitments.
- It also presents the shortfalls of third-party dispute resolution in the event one party doubts the validity of the process.
- Sustainable transboundary river governance is becoming more critical as a result of climate change, glacier retreat and changes in hydrological cycles and water demand.
- The problem is not just an Indian-Pakistani one because there are a number of common river basins in South Asia where water diplomacy is closely linked with the security issue in the region.

Way Ahead:

- India should take steps to utilise its legitimate water rights in a technically efficient and treaty-compliant manner and should also be ready for international litigation.
- Water data-sharing and technical communication should remain so as to avoid water-related conflicts from becoming broader humanitarian situations.
- Both countries could potentially develop a new bilateral mechanism to tackle modern problems like climate change, hydropower, flood management and water efficiency.
- India should simultaneously build up the capacity at home for water storage, water use efficiency, watershed management, and climate-smart infrastructure.
- A basin-level, science-based approach is necessary because it is impossible to resolve problems with geopolitical confrontation alone.

Conclusion:

- The Indus Waters Treaty will hinge on India's future balancing of its sovereign development needs with international obligations and regional peace and stability.
- This current crisis is a chance to re-imagine the treaty framework while keeping water security and sustainable development, along with long-term peace, as a priority for India.

Source: **The Indian Express**

Prelims PYQ:

Q. With reference to the Indus river system, of the following four rivers, three of them pour into one of them which joins the Indus directly. Among the following, which one is such a river that joins the Indus directly? (2021)

(a) Chenab
(b) Jhelum
(c) Ravi
(d) Sutlej

Ans: (d)

2.14 Semicon 2.0: India's Chip Push

Syllabus: Science & Tech [GS 3]

Context:

Approved with an outlay of ₹1.27 lakh crore, Semicon 2.0 (India Semiconductor Mission 2.0) expands upon the initial ₹76,000-crore program to shift India from basic assembly toward owning the complete semiconductor value chain. It is a key design thrust on indigenous intellectual property (IP), strategic system-on-chips (SoCs) and risk capital for startups.

Context & Shift from ISM 1.0 to Semicon 2.0:

- **ISM 1.0 Focus:** Attracted basic fabrication facilities, basic assembly and testing facilities, and packaging facilities.
- **Semicon 2.0 Focus:** Builds local expertise in chip design, cutting-edge research, specialized equipment and key raw materials.
- **The Strategic Intent:** Reduces dependence on foreign supply chains in order to secure critical infrastructure, media, telecom and defense.

Core Pillars for the Domestic Chip Design Ecosystem:

- **Six Strategic Building Blocks:** Local R&D focusses on compute, memory, power, networking, radio frequency (RF), and sensors.
- **Design Linked Incentive (DLI) Scheme:** "Financial incentives and design infrastructure support for designs that are linked to semiconductors such as IP cores, System-on-SoCs, chipsets and ICs." Implemented via C-DAC.
- **Risk Capital and Seed Money:** Support startups and MSMEs by providing electronic design automation (EDA) tools and the backing for commercial viability.
- **Inclusive Participation:** To achieve rapid momentum with domestic enterprises and companies owned by Overseas Citizens of India (OCIs).

India's Human Capital being leveraged:

- **Talent Advantage:** India currently has about 20% of the world's top semiconductor design talent with local engineers working on the next generation 2nm and 3nm process nodes.
- **Manpower Scaling:** Targets to produce 1 lakh skilled design engineers to serve Design Centers across the globe and country.

Strategic Significance for India:

- **Technological Sovereignty:** India can develop its own chip architecture, making their defense networks, telecommunications (5G/6G) and space systems immune to malicious supply chain vulnerabilities or hardware Trojans.
- **Moving Up the Value Chain:** Capturing the high-margin design phase gives India a way to get away from low-margin consumer assembly and become a high value technology provider.

- **Economic Resilience:** Enhancing local supply chain resilience to protect India's digital economy from unforeseen geopolitical conflicts and shipping choke points.

Conclusion:

With its vision of stepping India from being only a semiconductor consumer to a critical player in the global chip and design IP value chain Semicon 2.0 succeeds. The government should not only fit this newly designed domestic intellectual property into the upcoming local manufacturing nodes but also integrate them seamlessly. This will help develop a strong multi-decades technology ecosystem.

Source: **The Indian Express**

UPSC Practice Question:

Q. Discuss the significance of Semicon 2.0 for India's semiconductor self-reliance.

2.15 SCO Summit: India' Call to End Terror Ecosystem

Syllabus: IR [GS 2]

Context:

Prime Minister Narendra Modi made a strong statement on regional security at the 26th SCO Summit in Bishkek, Kyrgyz Republic. He urged the member-states to eradicate the whole ecosystem of terrorism, incurrence of financing, recruitment, radicalisation and safe havens.

Key Pillars of India's Address:

1. Combating the Terror Ecosystem

- Zero Tolerance Framework: India called for a zero tolerance approach towards cross border terrorism, separatism and extremism. It expanded on "action-reaction" theory to call for the "elimination" of terror apparatuses in their very structure.
- No "Strategic Assets": State sponsors cannot treat terrorism as a policy tool.
- Eliminating Double Standards: Member states must avoid hypocrisy in designating terrorists or acting against asymmetric regional threats.

2. Geopolitical and Regional Dynamics

- The Pakistan Factor: The remarks were significant in a geopolitical context, given that Pakistan was given the prestigious rotating SCO Chairmanship for the year 2026–27.
- Stability in Afghanistan: India connected the security in the Eurasian region with peace in Afghanistan, promising to continue developmental and humanitarian support.
- The SECURE Vision: India continued to build on the central SCO agenda, with a particular emphasis on the three pillars of the Vision – Security, Connectivity and Opportunity.

3. Connectivity and Sovereignty

- Territorial Integrity: India underscored that infrastructure development projects should respect the territorial integrity. This is a tacit rejection of the China-Pakistan Economic Corridor (CPEC) and the China Belt and Road initiative (BRI) to pass through Indian soil.

Summit Outcomes & Declarations:

- **The Bishkek Declaration:** The joint communique reiterated India's position, calling for "unacceptability of attempts by the use of terrorist, separatist and extremist groups for personal gain.
- **Institutional Expansion:** The summit approved a new Universal Centre for Countering Challenges and Threats to Security, which will provide a one-stop platform to address cyber-terrorism, organized crime and narcotics trafficking.

India's Strategic Relevance:

1. Multilateral Leverage

- Enhances India's own position as a security contributor and a key player in Eurasia.

- Raising the issue of 'Terrorism' and 'State sponsored Terrorism' at a Multilateral Platform in India.

2. Institutional Reforms

- Adding English will help to improve communication in the SCO.
- Enhances the role of the Regional Anti-Terrorist Structure (RATS) in tackling terrorism and extremism.

3. Eurasian Connectivity

- Supports the development of alternative connectivity avenues in Eurasia for India.
- Provides a way to balance China's growing economic influence.
- India is a party to connectivity programmes that are based on international law and respecting international sovereignty.

Way Forward:

- Strengthening RATS: Enhance the mandate of the Regional Anti-Terrorist Structure (RATS) via joint intelligence databases and real-time counter-terror operations.
- De-radicalisation Initiatives: Share India's de-radicalisation models in capitals of the Central Asian countries to address digital and ideological extremism.
- Comprehensive Convention on International Terrorism (CCIT): Use consensus in the SCO to create groundswell for the long pending adoption of India's draft CCIT at the United Nations.

Source: News on Air, The Hindu

UPSC Practice Question:

Q. Examine the significance of the SCO for India's strategic and security interests.

2.16 Delhi HC Protest Maternity Rights

Syllabus: Social Justice [GS 2]

Context:

The Delhi High Court recently gave a landmark ruling that the concept of maternity leave cannot be used as a pretext to diminish the professional status, job rank or career growth of an employee. The court had asked the Central Government to come up with comprehensive rules within six months and make them uniform in all sectors.

Context of Ruling:

The ruling was a response to a petition filed by an employee who was demoted in her duties and her position was watered down after taking a sanctioned maternity leave. The court noted that a woman's fundamental constitutional rights are being infringed upon by penalizing her because she took maternity leave.

Key Highlights of the Judgement:

1. Protection of Stature and Seniority

- No Role Dilution: A woman should not be demoted or lose her position within the organisation (or responsibilities) after making the transition to maternity leave.
- Career Continuity: Period of absence should be continuous for the purpose of promotion, performance appraisal and seniority increment.

2. Central Government must mandate

- Six Months' Deadline: The Centre has six months to make clear its guidelines for executing this protection.
- Standardized rules: The rules will offer an objective means for public and private sector bodies to manage post-maternity transitions.

Constitutional & Legal Framework:

The decision is consistent with already in place legal protections for reproductive and employment rights:

- **Article 14:** Equality before the law; punishing motherhood is gender discrimination.
- **Article 15:** Bans discrimination based on sex.
- **Article 21:** Ensures a woman's right to life with dignity and reproductive option without compromising her economic livelihood.
- **Article 42 (DPSP):** Guides the State towards ensuring conditions of work and maternity relief are just and humane.
- **Maternity Benefit Act, 1961 (Amended 2017):** Provides for 26 weeks of paid maternity leave but had no clear penal provisions to prevent "soft demotion" or structural discrimination after return.

Significance of the Ruling:

For Gender Equality at the Workplace

- Reduces "Motherhood Penalty": Reduces systemic biases that result from the perception that working mothers are less committed to their careers and less likely to have a consistent career trajectory.
- Enhances Female LFPR: Safeguarding career prospects encourages retention, helping arrest India's declining Female Labour Force Participation Rate (LFPR).

For Institutional Governance

- Defines "Maternity Relief": Expands the definition of maternity benefit from mere financial compensation to holistic career protection.
- Fosters Inclusive Corporate Culture: Pushes HR structures to craft structured re-entry and reintegration programmes for mothers.

Challenges in Implementation:

- **The Unorganized Sector:** More than 80% of India's women workers are employed in the informal sector and there is significant difficulty in ensuring compliance.
- **Employer Backlash:** Strict regulations might inadvertently cause small businesses or startups to hesitate when hiring women of childbearing age due to perceived compliance costs.
- **Indirect Discrimination:** These are less obvious exclusions from main projects or strategic customers that it can be difficult to quantify or provide legal evidence of.

Way Forward:

- **Strengthen the Frameworks:** Independent audit mechanisms and robust grievance redressal mechanisms for organizations to be included in the upcoming Central rules.
- **Sensitisation and Audits:** Awareness workshops on Gender Neutrality should be held for the management as a mandatory activity for the companies.
- **Paternity Leave Integration:** Going forward, policy design should increasingly move to a model of shared parental leave (SPL) in order to break the monopoly hiring bias against women.

Source: TOI

UPSC Practice Question:

Q. Can legal mandates alone fix the career penalties faced by working mothers in India? Evaluate.

2.17 NASA Roman Space Telescope

Syllabus: Science [GS 3]

Context:

NASA's new Nancy Grace Roman Space Telescope will take to space on 30 August and is poised to answer some of the universe's most fundamental questions, with a major improvement in space-based astronomical observations.

Key Highlights:

- The mission is named in honor of Nancy Grace Roman, who was the first chief astronomer at NASA and was instrumental in the development of Hubble and the James Webb Space Telescope, and will provide complementary capabilities to Hubble and the James Webb Space Telescope.
- The telescope should give new insights into dark matter, dark energy, exoplanets, and the large-scale structure of the universe.

Importance of Roman Space Technology:

- Roman is engineered for fast, wide sky surveys, rather than scrutinising individual objects in great detail, as are telescopes that are mainly devoted to such tasks.
- Because of its broad field of view, it will also allow astronomers to observe billions of objects in the cosmos and discover patterns that can't be seen in narrow field observations.
- The ability to survey the entire sky with this kind of resolution and then observe the objects using infrared astronomy would give mankind a much broader view of cosmic evolution.

Studying Dark Matter & Dark Energy:

- **Dark Matter**
  - Only about 5% of the universe is ordinary matter; the rest is estimated to be dark matter.
  - Dark matter does not radiate light that we can detect, but exists as a gravitational presence that helps to explain the structure and formation of galaxies.
  - Observations of gravitational lensing, a bending of light by gravity, will help map the distribution of matter throughout the cosmos, and Roman will be able to do this.
- **Dark Energy**
  - Dark energy is believed to make up almost 68% of the universe and is linked to the acceleration in the expansion of the universe.
  - Roman would make subsequent observations of galaxies far beyond the solar system and measure cosmic structures as they change over time, bettering the scientific knowledge of how the universe expanded.
  - The observations it makes could thus be used to help scientists test the competing theories about what dark energy is.

Exploring Exoplanets:

- Exoplanets are planets that orbit other stars in the Universe and are normally found by observing the effects that they have on the host star.
- Roman's broad-field observations could allow for a much greater number of exoplanets, especially those discovered by gravitational microlensing, to be identified.
- The larger the exoplanet sample, the better the astronomers and scientists will be able to comprehend the process of planetary formation, the variety in planets, and the conditions for life.
- The mission might then help to answer one of astronomy's most enduring questions: Are we alone in the universe?

Key Technologies:

- **Wide Field Instrument**
  - Roman's Wide Field Instrument is a strong infrared camera which can see a patch of sky much broader than what Hubble can in one snap.
  - It will be able to image things very quickly, enabling large scale astronomical surveys and enormous amounts of scientific data to be produced.
- **Coronagraph**
  - Roman will also have a more sophisticated coronagraph that can block out the bright light of stars.
  - The dimming allows scientists to try to see the much fainter light reflecting off planets that orbit the stars.
  - This technology could help to better understand planetary systems and to assist in future searches for habitable planetary systems.
- **Lagrange Point 2**
  - Roman will fly around Sun-Earth Lagrange Point 2 (L2), located at about 1.5 million kilometres from Earth.
  - L2 is a good place for space observatories because gravitational forces of the Sun and Earth ensure a stable observing configuration for the spacecraft.
  - This is also a good area for observing deep space objects.

Data & Scientific Impact:

- Roman will produce a massive amount of astronomical observations, necessitating sophisticated data transmission, processing and analysis systems.
- It can produce large-scale surveys that result in precise maps of galaxies and the distribution of matter, enhancing understanding of the cosmic web and evolution of the universe.
- It will also showcase how observations from multiple space telescopes are more valuable when they are used together, and not as separate observatories.

Significance for India:

- Astronomy, space technology, advanced sensors, artificial intelligence and high-performance computing are vital to missions like Roman.

- Enhancing India's expertise in space sciences can aid in the research of astrophysics, satellite technology, data science, and scientific instrumentation.
- India can make a better contribution to global space research activities through collaboration with international scientific missions.

Way Ahead:

- More cooperation between countries in data processing and analysis of massive amounts of data from next-generation space telescopes.
- Artificial intelligence and advanced computational methods should be used more to detect patterns and anomalies in astronomical data.
- Space agencies should keep working on technologies to directly image distant planets and to characterize their atmospheres.
- Investment in basic space science, astronomy research, scientific instruments, human resources in India should be boosted.

Conclusion:

- The Nancy Grace Roman Space Telescope is a new class of astronomical observatory that can explore the universe on a scale never before seen.
- Roman could help answer some of the most fundamental questions about the origin, structure and future of the universe by studying dark matter, dark energy, exoplanets, and gravitational lensing.

Source: **The Indian Express**

Prelims PYQ:

Q. Which of the following is/are cited by the scientists as evidence/evidence for the continued expansion of the universe? (2012)

1. Detection of microwaves in space
2. Observation of redshift phenomenon in space
3. Movement of asteroids in space
4. Occurrence of supernova explosions in space

Select the correct answer using the codes given below:

(a) 1 and 2
(b) 2 only
(c) 1, 3 and 4
(d) None of the above

Ans: (a)

2.18 Reforming Allied Healthcare Education

Syllabus: Social Justice [GS 2]

Context:

The Ministry of Health and Family Welfare has taken several steps to improve the quality, regulate and standardize allied and healthcare education in India. This shift is designed to fill longstanding gaps in the non-medical healthcare field, as well as bring in a level of performance more in line with international standards.

Overview:

As allied professions, they include healthcare workers such as physiotherapists, nutritionists, lab technicians, and radiology experts. Although it is the backbone of the healthcare delivery system, this sector has in the past lacked uniformity in curriculum, unregulated institutions, and quality assurance. This new guidelines are going to create a formalized area to ensure highly skilled workforce to support the medical ecosystem.

Core Objectives of the Reforms:

- **Standardisation:** Developing a common, national curriculum for allied health courses.
- **Quality Assurance:** Establishing high standards in infrastructure and faculty for training institutes.
- **Global Alignment:** Aligning Indian healthcare education with international qualification frameworks to boost global employability.
- **Patient Safety:** Ensuring only qualified and trained practitioners provide diagnostic and therapeutic services.

Key Initiatives & Pillars:

The bolstering system is based on three main points geared toward transforming the educational system:

1. Unified Curriculum Framework

- Core Competencies: Transitioning from traditional instruction to competency-based instruction.
- Interdisciplinary Learning: Digital Health, Medical Ethics and Communication Skills in basic training.
- Mandatory Internships: Specifying the number of internships and clinical experience needed to graduate.

2. Regulatory Compliance and Accreditation.

- Institutional Audits: These are the periodic checks made on the Colleges to assure laboratories and faculty qualifications.
- Rating System: A new system designed to rate educational institutes according to their performance.
- Central Registry: Maintaining a live national register of recognized institutions and certified professionals.

3. Faculty Development Programs

- Upskilling: Ongoing training opportunities for teachers to stay current with changing medical technologies.

- Research Integration: Fostering research and EBP at the undergraduate level.

Significance for the Healthcare Sector:

- **Reduces Doctor Burden:** Highly skilled allied professionals can handle diagnostics, rehabilitation and primary monitoring all on their own.
- **Enhances Rural Healthcare:** Training is uniform, competent technicians deployed at tier-2, tier-3 and rural clinical centers.
- **Curbs Quackery:** A centralized registration system eliminates unqualified individuals operating in diagnostic and therapy spaces.
- **Professional Boost:** With well-trained skills and expertise, one can benefit from the demand for medical technicians and therapists in the world market.

Challenges in Implementation:

- **State-Level Variances:** Health is a state subject in India and may result in a lack of uniformity in adopting the policy across the state.
- **Infrastructure Deficit:** Many private institutes have not the resources to upgrade the labs immediately and appoint high quality faculty members.
- **Affordability:** Higher compliance and infrastructure costs may result in higher tuition, making it less affordable for rural students.

Way Forward:

In order to realize the potential gains of these reforms, the government needs to implement them in a gradual fashion and provide incentives to the less established institutions to improve. A harmonious system of the National Medical Commission (NMC) and Allied Healthcare Councils will make medical ecosystem strong. The National Health Policy and the vision of Universal Health Coverage (UHC) for India cannot be achieved without a well-trained allied health care workforce.

Source: PIB

UPSC Practice Question:

Q. Examine the need for standardisation and regulation of allied healthcare education in India.

2.19 AI in Water Data Governance

Syllabus: Governance [GS 2]

Context:

Water data governance powered by AI reflects the importance of water planning integration, water use efficiency and water scarcity management.

Key Highlights:

- India is currently grappling with several problems concerning water availability, groundwater depletion, shifting precipitation patterns and increasing demand from agriculture, industries and cities.
- The new focus on strong water data stewardship and Artificial Intelligence (AI) demonstrates the necessity of shifting away from disjointed and ad hoc water management and towards integrated and technology-based planning.
- Aggregating water sector information in a standardised format can enhance the collection, analysis, forecasting and evidence-based decision-making.

Importance of Water Data Governance:

- Water management requires information from a variety of sources such as precipitation, groundwater, stream flows, reservoirs, irrigation withdrawals, urban water use and wastewater.
- If this information is not consolidated in one place within departments and institutions, then it can be hard for policymakers to get the big picture about the availability and demand for water.
- A common data format allows various agencies to exchange, compare and analyse data more efficiently.
- Improved water data can inform early detection of water stress and help to inform anticipatory rather than emergency response planning.

Role of Artificial Intelligence in Water Management:

- **Better Data Collection**
  - AI-driven systems can interpret the data collected from satellites, sensors, weather stations, groundwater monitoring stations and smart meters.
  - Automated systems can contribute to the detection of shifts in water availability, water consumption, and the development of stress areas.
- **Predictive Water Management**
  - AI/machine-learning models can leverage historical and real-time data to enhance drought, rainfall, flood and water-demand forecasts.
  - Such forecasting can assist in better planning of reservoir management, irrigation scheduling and urban water supplies.
- **Groundwater Management**
  - Groundwater resources are playing a major role in the agriculture and drinking water needs of India.
  - Data on groundwater levels can be analysed using AI, with accounts taken of rainfall, land use and extraction, to pinpoint areas that are at risk of being seriously depleted.

- This can help inform targeted groundwater recharge and conservation efforts.

Promoting Water-Saving Technologies:

- The use of water-efficient irrigation technologies can lower water use in agriculture.
- Methods like drip and sprinkler irrigation can increase water-use efficiency and minimise water wastage.
- Closed-loop water systems and wastewater treatment systems can be used in industries to minimize the use of freshwater.
- Encouraging innovations in the industry will help to create inexpensive technologies for India.

Treated Water as a Resource:

- Safe reuse of treated wastewater for appropriate uses in agriculture and industry can alleviate water stress.
- Efficiently increasing wastewater treatment and reuse can help realize a circular water economy.
- But this can only be realised with appropriate treatment standards, monitoring systems and public-health protection systems.

Importance of Integrated Planning:

- Water scarcity cannot be solved by individual solutions in one department, as water availability is interlinked with agriculture, urbanisation, industry, energy, climate and ecology.
- Environmental sustainability can be achieved through integrated planning, which can provide a balance between competing demands.
- Planning for the entire river basin can enhance the coordination of upstream and downstream uses.

Challenges:

- Poor integration can be caused by different data standards and fragmented databases.
- If the data is of poor quality or incomplete, the AI-generated predictions may be less reliable.
- Limited technical knowledge and digital infrastructure may hamper the adoption, especially at the local level.
- As water systems become more and more digital, data privacy, cybersecurity and institutional coordination should be discussed as well.

Way Ahead:

- The national water-data architecture should be developed in India to standardise the rules of data sharing among relevant institutions.
- AI is not a substitute for hydrological expertise, knowledge in the field and scientific validation.
- Sensors, remote sensing, local reliable data collection, and digital monitoring of groundwater should be the priorities of investments.
- Research, home production, capacity development and appropriate incentives must be encouraged to promote water-saving technologies.

- The re-use of treated wastewater, rain harvesting and recharge of groundwater should be included in a comprehensive water security plan, along with efficient irrigation.

Conclusion:

- Water in India needs to move from reactive water management to proactive, data-driven and integrated governance.
- Water databases can be complemented by AI and water-saving technology to enable more efficient use of water and enhance water security in the face of water scarcity.
- Finally, technology will be successful if it is accompanied by institutional coordination, reliable data, scientific validation and responsible water-use practices.

Source: **The Indian Express**

Mains PYQ:

Q. What are the salient features of the Jal Shakti Abhiyan launched by the Government of India for water conservation and water security? (2020)

2.20 UNEP Climate Report: The World is Heading Beyond 1.5°C

Syllabus: Environment [GS 3]

Context:

Further cuts in emissions and action on adaptation are necessary, as the world is likely to exceed the 1.5°C target, according to a new UNEP assessment.

Key Highlights:

- There are no scientifically viable options to keep global warming below 1.5°C above pre-industrial levels, according to a recent United Nations Environment Programme (UNEP) study.
- So the emphasis of global climate policy is now on reducing the size of the overshoot, as well as its duration, and also establishing a trajectory of decreasing warming.
- The development is of great importance for climate mitigation, adaptation, climate finance and sustainable development, especially for vulnerable countries.

What does the 1.5°C Threshold Mean?

- The goal of the Paris Agreement is to ensure that the global average temperature rise remains well under 2°C above the pre-industrial level, with efforts to keep the rise to 1.5°C.
- The 1.5°C threshold is not a threshold that suddenly becomes catastrophic for impacts of climate change.
- Rather, the risks from climate change tend to escalate as the warming goes up.
- Increased temperature equals increased risks of heatwaves, extreme precipitation, flooding, droughts, wildfires, glacier melt and ecosystem damage.

Why has the 1.5°C Target become Difficult?

- **Increase in Greenhouse Gas Emissions**
  - The remaining carbon budget compatible with limiting long-term warming has been used up quickly as emissions of carbon dioxide and other greenhouse gases have increased.
  - Current climate policies have the trajectory upbeat relative to previous forecasts, but insufficient to meet the most ambitious temperature target.
- **Increasing Climate Impacts**
  - Recent extreme weather events illustrate how an increase in temperature can exacerbate vulnerabilities to create significant social and economic losses.
  - Developing countries, especially those with a weak capacity for financial and technological resources, are especially vulnerable to climate-related disasters.

Annual Breach vs. Long-Term Warming:

- Even though the 1.5°C threshold has been surpassed in some years, this does not necessarily imply that the long-term temperature ceiling set by the Paris Agreement has been crossed.
- El Niño is one of the natural climate variations that can affect annual temperatures.

The Role of Carbon Dioxide Removal:

- Carbon dioxide removal (CDR) is a set of strategies that involve the removal of CO_2 from the atmosphere and long-term storage.
- CDR may prove critical in reducing the extent of climate overshoot and may help to bring back warming levels below 2°C in the future.
- However, CDR technologies have been used at a relatively small scale, and come with issues of cost, energy use, land use, permanence and environmental impacts.
- Carbon removal is consequently not a solution to the reduction of GHGs but rather a complementary solution to the fast reduction of GHGs.

Implications for India:

- India is highly vulnerable to heat stress, irregular monsoons, floods, droughts, hazards associated with glaciers and sea level rise.
- Agriculture, water resources, public health and livelihoods can be particularly vulnerable to climate change effects.
- India must thus strive to go for both mitigation and adaptation, without losing sight of its development and poverty alleviation agenda.
- Infrastructure that is resilient to climate change, heat action plans, and drought-resistant agriculture, as well as water conservation and disaster preparedness, will play an increasing role.

Global Climate Governance Challenge:

- The Paris Agreement and multilateral climate negotiations are not superfluous in the face of the prospect of breaking the 1.5°C limit.
- Rather, it places a greater emphasis on the need for enhanced Nationally Determined Contributions (NDCs), financing, technology transfer and international cooperation.
- Developed countries are in a special place to offer financial and technological assistance to developing countries in the face of their disproportionate climate impact.

Way Ahead:

- Deep and permanent GHG reductions are needed in the energy, transport, industry and land-use sectors and need to be accelerated by countries.
- There is an urgent need to accelerate the scaling up of renewable energy, energy efficiency, electrification and the use of low-carbon technologies.
- The deployment of CDR should be done in a responsible manner, as an additional rather than an alternative approach to emissions reduction.
- There is a need for increased financial and institutional support for climate adaptation and disaster risk reduction.

Conclusion:

- Don't let the fact that the 1.5°C overshoot is now an inevitability be an excuse for inaction.
- Avoiding each degree can minimize future climate impacts, losses and human suffering.
- The main question now is how to reduce the overshoot as much as possible, how to speed up the process of emissions reductions, and how to improve adaptation to a warmer world, so that it does not become a humanitarian disaster.

Source: **The Indian Express**

Mains PYQ:

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? (2017)

2.21 Caste vs. Class: The 2027 Census Dilemma

Syllabus: Social Justice [GS 2], Governance [GS 2]

Context:

The Union Government has decided to adopt an open-column system for recording caste data in the 2027 Census. During administrative deliberations, the government rejected the proposal to use the existing Other Backward Classes (OBC) lists maintained by the Central and State governments. The rationale was that these lists classify communities into broad "classes" rather than providing a uniform list of specific castes for caste enumeration.

Reasons for Dropping OBS Lists:

The Registrar General of India (RGI) and the Ministry of Home Affairs pointed out that the OBC lists suffer from various structural flaws and are impractical for a detailed caste-based enumeration:

- **Inclusion of Non-Caste Groups:** The Central and State OBC lists contain nearly 3,000 communities. But a small proportion of these entries is of occupational groups, settler groups or of particular types of labourers and not of a particular caste. "The examples cited are concrete: Officials pointed to "local borns" in the Andaman and Nicobar Islands and tea garden workers in Assam."
- **Inter-State Categorisation Anomalies:** Caste identities are not uniform across state boundaries. Several communities which may be in OBC lists in one State may be considered ST or SC in others. The absence of national harmonisation results in technical issues when it comes to the harmonisation of a national drop down menu.
- **Nature of the Lists:** By definition, under Article 342A of the Constitution, these lists denote Socially and Educationally Backward Classes (SEBCs). They are not anthropological counts of endogamous groups of castes but descriptions of socioeconomic backwardness.

The Adopted Mechanism is the Open-Column Method:

Instead of pre-defined drop-down options used for Scheduled Castes (SCs) and Scheduled Tribes (STs), the 2027 Census will feature an open field format for all other categories.

- **Verbatim Recording:** Enumerators will transcribe the name of the caste given by the head of the household without the involvement of any state body to arbitrate or verify the structure of the caste.
- **Historical Precedent:** It would be the first Census to count caste beyond the Presidential lists of SC/ST since 1931.

Key Administrative & Policy Challenges:

While the open-column method avoids state-level arbitration, experts, sociologists, and opposition leaders point out significant vulnerabilities:

- **Data Fragmentation (The 2011 Precedent):** In the Socio-Economic and Caste Census (SECC) of 2011, an open field methodology led to the creation of over 46 lakh distinct caste names due to regional spellings, synonyms, and sub-caste descriptions. If the surname is misspelled, then the

misspelling also is included in the caste column. The government ended up withholding the raw 2011 data after the overwhelming data noise.

- **Absence of a Standardised Caste Code:** Unlike SC/ST categories that rely on updated Presidential Orders, the lack of mandatory caste coding means the open-column method will produce an unusable narrative dataset. It will not yield a correct, clean and exclusive estimate of the national OBC population, critics say.
- **Constraints of capacity:** The Census of India is not a verification body but an exercise to gather data. It does not have a special linguistic and sociological coding unit to process millions of phonetic differences into a structured database.

Way Forward:

To extract meaningful data for policies like OBC sub-categorisation or expanding social security benefits, India needs a balanced framework:

- **Consultative Standardisation:** The RGI should consult state government, sociologists, anthropologists for a pre-determined comprehensive list, as recommended by experts.
- Grouping by regionals and by synonyms into one caste code from various regional spellings is possible during the post-enumeration data-processing phase, through the use of advanced phonetic algorithms and data-matching tools.
- **Using State Surveys:** Methodologies from recent state level surveys like Bihar and Telangana can provide granular baselines for cleaning the macro data which would be collected in the national census.

Source: The Hindu

UPSC Practice Question:

Q. Discuss the significance of caste enumeration in the 2027 Census.

2.22 'Supersized' El Niño: Global & Indian Impacts

Syllabus: Geography [GS 1], Environment [GS 3]

Context:

The World Meteorological Organization (WMO), a special agency of the United Nations (UN), is concerned that this 'Supersized' El Niño event will prove to be one of the strongest ever. It is an important issue for geography and environmental ecology as it is a critical phenomenon in the context of global climate patterns, agricultural security and disaster management.

Understanding El Niño and the ENSO Cycle:

What is El Niño?

- El Niño is the warm part of the El Niño-Southern Oscillation (ENSO) cycle. It is an abnormal warming of the upper ocean over the central and eastern equatorial Pacific Ocean, a natural phenomenon of the climate system.

Mechanism of Alteration

- Normal Conditions: strong easterly winds blow across the Pacific Ocean pushing warm surface water toward Asia and Australia; cold nutrient-rich water wells up under South America (Peru Current).
- El Niño Conditions: Trade winds go weak or reverse. Warm water bounces back eastward to South America. This suppresses the cold upwelling and alters global atmospheric circulation (the Walker Circulation).

Why is the Current Event Termed 'Supersized'?

- **Unprecedented Sea Surface Temperatures (SSTs):** The current El Niño event is being described as "supersized" with SSTs in the key Nino 3.4 region rising much higher than the historical average, falling into the "historic" or "extreme" category.
- **The Climate Change Amplifier:** Anthropogenic GHG emissions are trapping excess ocean heat. In an El Niño year when there is a background warming of the planet, it produces extreme weather events that are unprecedented and beyond what has been experienced in the past, such as in 1997-98 and 2015-16.

Global Implications:

- **Shattering Temperature Records:** Post-peak Super El Niño warms global climates with slow release of absorbed heat to the atmosphere by oceans. Thus, 2027 is expected to be the warmest year in history.
- **Extreme Weather Asymmetry:** The phenomenon affects the global precipitation distribution. It's driving intense tropical storms and hurricanes in the central Pacific, and causing severe droughts in the Amazon rainforest, Australia and portions of Southeast Asia.
- **Ecological Crisis:** Marine ecosystems face critical disruption. Abnormally warm waters, up to 8°C warmer than normal in some areas, could cause a large scale coral bleaching event and impact fisheries around the world.

Specific Impacts on India:

The southwest monsoon generally missed the impact of the dry spells as the peak was delayed by a few months, but the impact of the long dry spell is now into early 2027 and comes with its own set of challenges:

- **Threat to Rabi Crops:** A prolonged El Niño stretching into February 2027 will trigger an abnormally warm winter across northern India. Excessive terminal heat stress is a potential threat to the food security of the vital wheat belt in the winter season.
- **The IOD Cushion:** Fortuitously, a positive Indian Ocean Dipole (IOD) co-developed during the latter half of 2026. This regional sea-warming event is a counter-balancing factor and partly compensates for the known monsoon anomaly during El Niño.
- **Spring Heatwaves:** History indicates that years after a Super El Niño always produce record summer heatwaves across the Indian subcontinent, the "decay year".

Way Forward & Policy Measures for India:

To counteract this "supersized" climate change, India has to take proactive administrative measures prior to the onset of the spring 2027:

- **Good Food Contingency:** It is necessary for the MofaC to keep healthy buffer stocks of wheat to compensate for any shortage in the Rabi season. Export policies need to be assessed on a dynamic basis for commodities that are climate sensitive, such as rice and onions.
- **Urban Heat Action Plans (HAPs):** Municipal corporations must turn on specific HAPs in advance in order to keep vulnerable populations safe from excessive heat during the summer months.
- **Reservoir and Water Management:** In drier states, water-budgeting and reservoir-rationing policies are necessary for coping with depletion of groundwater during the winter/spring.

Source: The Hindu, BBC

UPSC Practice Question:

Q. What do you understand by a 'Supersized' El Niño? Examine its impact on global weather anomalies and discuss its specific socio-economic implications for the Indian monsoon and agricultural economy.

2.23 India-Belgium Defences Ties: A New Strategic Partnership

Syllabus: IR [GS 2]

Context:

Indian-Belgian defence collaboration is moving ahead, with the militaries of the two nations planning to further enhance their ties in military technology and strategic industries, as well as maritime security and defence.

Key Highlights:

- The recent high-level meeting has led to the signing of a Letter of Intent, which lays the framework for structured cooperation between the armed forces of the two countries.
- The partnership has bearing on indigenisation of defence, technology transfer, domestic manufacturing and diversification of defence supply chains of India.

Key Areas of Defence Cooperation:

- **Maritime Security**
  - India is ideally located in strategic zones of the Indian Ocean to support trade and has made maritime security an important space for cooperation.
  - Cooperation is being explored in the areas of mine countermeasures, autonomous maritime systems, underwater robotics, and advanced sensors, and protection of critical infrastructure.
  - These are becoming even more critical for ensuring the protection and security of subsea communication cables, ports, pipelines, and other marine infrastructure.
- **Defence Manufacturing and Technology**
  - Cooperation is being discussed across various domains, including weapons systems, ammunition, radar, electro-optical systems, command, control and counter-drone systems between India and Belgian companies.
  - Joint production would not only lead to a boost in domestic manufacturing capacities but also provide a market opportunity to European companies for the developing Indian defence market.
  - Cooperation in ammunition production and advanced military equipment can also help to build supply chain resilience in the face of geopolitical uncertainties.
- **Drones and Counter-Drone Systems**
  - With the growing incorporation of drones in today's conflicts, the importance of unmanned aerial systems and counter-drone technologies has risen.
  - Indian companies can be given support from Belgian companies to boost interception, surveillance and protection of critical military installations using drones.
  - A local system for production and development of such systems can help to limit dependence on external suppliers.

Significance for India:

- **Defence Atmanirbharta:** Technology partnerships and local manufacturing can help bolster India's goal of becoming self-reliant in defence manufacturing.
- **Technology Transfer:** In the field of sensors, robotics, fire-control and air-defence systems, technological cooperation can enhance India's technological prowess.
- Reduce excessive dependency on a few defence suppliers through supply chain diversification with better European links.
- **Belgium's Security in the Indo-Pacific (SIP):** The country's involvement in Indo-Pacific security aligns with India's status as a key maritime power.
- **Industrial Growth:** Joint ventures and manufacturing projects have the potential to create jobs, build local defence supply chains and grow India's defence industrial base.

Strategic Significance of Europe:

- The European and Indo-Pacific security landscapes are becoming more and more intertwined as events in one area have an impact on the other area, such as developments in Europe impacting global trade, energy security, and strategic stability in the Indo-Pacific.
- This can help nurture a more diversified and resilient strategic partnership network for India with the European countries.
- Belgium's technological expertise in the field of specialised defence systems opens the door for India to further diversify cooperative relations with the country, beyond the scope of traditional trade ties.

Challenges:

- Variations in defence procurement processes, technology transfer requirements and intellectual property rights may slow projects.
- Industrial cooperation calls for predictable procurement policies, appropriate testing equipment and commitments for the long-term.
- Imported technologies need to have a significant impact on the design and manufacturing in India and not be another source of dependence.

Way Ahead:

- Co-development and co-production should be looked at instead of importing defence products.
- There should be a greater focus on the development of joint research programmes in new fields like autonomous systems, underwater technologies, artificial intelligence, advanced sensors and counter-drone measures.
- There is a need to mainstream defence-industrial cooperation with India's Make in India and defence export goals.
- Strategic trust can be further enhanced through regular military exercises, exchanges of officers and training, and institutional dialogue.
- Enhanced engagement with European partners can support India's diversification and resilience of its defence supply chain, and help to ensure stability in the Indo-Pacific and beyond.

Conclusion:

- Defence cooperation between India and Belgium is a sign of the maturing of bilateral ties from economic cooperation to strategic, technological and industrial partnership.
- The cooperation is also a positive development that can help India modernise its military and help boost its local manufacturing and technological self-reliance.
- In the case of India, it would be much more important to build these partnerships into a sustainable innovation ecosystem, co-development, manufacturing and strategic resilience.

Source: **The Indian Express**

Prelims PYQ:

Q. Consider the following statements: (2023)
The 'Stability and Growth Pact' of the European Union is a treaty that

1. limits the levels of the budgetary deficit of the countries of the European Union
2. makes the countries of the European Union to share their infrastructure facilitie
3. enables the countries of the European Union to share their technologie

How many of the above statements are correct
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (a)

2.24 EOS-05 Satellite: India's New Eye in the Sky

Syllabus: Science [GS 3]

Context:

India's first dedicated imaging satellite for geosynchronous orbit, EOS-05, was successfully launched by the Indian Space Research Organisation (ISRO) with its GSLV-F17 launch vehicle.

Key Highlights:

- The mission is important because, except for the optical mapping mission, most Earth observation satellites fly in Low Earth Orbit (LEO), while EOS-05 would fly at a higher altitude so it could cover a wide area over a long duration.
- The satellite is initially launched into a Sub-Geosynchronous Transfer Orbit (Sub-GTO) and subsequently, through further orbit-raising manoeuvres, will be inserted into its operational orbit.

What does Geosynchronous Orbit mean?

- The geosynchronous orbit is the orbit in which a satellite completes its revolution around the Earth in 24 hours, the same time it takes the Earth to rotate once.
- If a satellite has the proper orbit, it may seem stationary over a specific area of the Earth at about 35,786 km above the equator.
- Geosynchronous orbits are especially useful for continuous monitoring, communication applications, and meteorology.

Why is EOS-05 Important?

- EOS-05 is India's first-ever imaging satellite from geosynchronous orbit, according to ISRO.
- A geosynchronous imaging satellite could continuously monitor the same wide area, whereas the LEO satellites move quickly over the surface of the Earth and revisit a specific area at regular intervals.
- This is a function that can be enhanced in the fields of weather monitoring, disaster management, agriculture, environmental observation and strategic surveillance.
- Continuous imagery may be of great value in the early stages of rapidly developing events like cyclones, floods, forest fires and other natural disasters.

GSLV-F17 & India's Launch Capability:

- The mission was performed by India's 19th flight of its Geosynchronous Satellite Launch Vehicle (GSLV).
- The GSLV is meant for launching heavier satellites into geosynchronous transfer orbit and related orbits and incorporates an indigenous cryogenic upper stage, which is significant in the development of launch-vehicle technology in India.

- EOS-05 was placed in a transfer orbit and subsequently, its own power will be used to incrementally increase the satellite's orbit.

Significance for India:

- Strengthens India's indigenous Earth observation ecosystem and orbital capabilities.
- Enables disaster preparedness, early warning and agricultural monitoring.
- Supports border surveillance and national security.
- Integrates space technology, remote sensing, AI and geospatial data.

Challenges:

- The technology of imaging from geosynchronous orbit imposes a much greater distance from the Earth than LEO, which means that there are spatial resolution issues, imaging issues and data processing issues.
- There is also a significant amount of ground infrastructure needed for continued monitoring to receive, process, store and disseminate data.
- Satellite effective utilization will thus rely not only upon the satellite itself, but also on the integration of the satellite data with meteorological, agricultural, disaster management and geospatial systems.

Way Ahead:

- Integrate satellite imagery with AI, GIS, weather models and real-time decision systems.
- Use Earth observation for disaster resilience, climate monitoring, water management and agriculture.
- Strengthen government–research–academia–private sector collaboration.
- Invest in advanced imaging and high-capacity data processing for future missions.

Conclusion:

- The EOS-05 mission will be a significant addition to India's space-based Earth observation portfolio.
- The satellite can augment the country's present LEO-based remote sensing constellation as it would allow for continuous observation from geosynchronous orbit.
- Hence, the mission emphasizes the potential of space technology as a more and more powerful governance, disaster risk reduction, environmental management and national security tool.

Source: **The Indian Express**

Mains PYQ:

Q. What is the main task of India's third mood mission which could not be achieved in its earlier mission? List the countries that have achieved this task. Introduce the subsystems in the spacecraft launched and explain the role of the 'Virtual Launch Control Centre' at the Vikram Sarabhai Space Centre which contributed to the successful launch from Sriharikota. (2023)

2.25 Punjab Groundwater Crisis

Syllabus: Agriculture [GS 3]

Context:

The latest Dynamic Groundwater Resource Assessment in Punjab indicates some slight improvement in groundwater situation, but the state remains in a critical situation of water insecurity.

Key Highlights:

- The net recharge in Punjab for the year is estimated at 19.14 billion cubic metres (BCM) of groundwater, and 17.29 BCM is believed to be available for extraction during the year.
- During 2025-26, the state drew 26.32 BCM of groundwater, which led to 152.22% groundwater exploitation.
- The results indicate the unsustainable situation of groundwater dependence in the agricultural sector in Punjab and a shift towards more efficient use of water and crops.

Key Findings:

- Of the 153 groundwater blocks assessed, 110 are identified as over-exploited, six are critical, 17 are semi-critical and only 20 are safe.
- This means that there is groundwater stress on about 116 blocks, a large proportion.
- However, there was some improvement as the number of over-exploited blocks reduced from 115 to 110.
- In 95 assessed blocks, groundwater use has declined, suggesting the need to find alternative sources of irrigation to ease the stress on aquifers.

Why is Punjab Facing a Groundwater Crisis?

- **Agricultural Dependence**
  - Groundwater is mainly pumped for agricultural purposes in Punjab.
  - In 2025-26, out of a total of 26.32 BCM extracted, about 24.95 BCM was utilized for irrigation.
  - The widespread use of tube wells has helped in increasing agriculture production, with the simultaneous depletion of groundwater resources.
- **Cropping Pattern**
  - Water use for the dominant irrigated crops (especially paddy) leads to enhanced irrigation demand and dependency on groundwater.
  - Historical conditions of guaranteed procurement incentives, subsidized electricity costs and irrigation traditions have historically prompted extensive groundwater irrigation.

Can Canal Irrigation Help?

- Increased canal irrigation may help to decrease farmers' reliance on groundwater and tube wells.

- However, there has been improvement in some groundwater blocks in recent years, which suggests that increased access to surface water can help to dampen demand for groundwater.
- In appropriate locations, canal recharge can also help to balance groundwater.
- But the extension of canals alone is not a solution that will end the crisis, as over-demanding the requirement of water and its inefficient use can occur even after the canal extension.

Environmental & Economic Implications:

- Further extraction of groundwater may cause a fall in the groundwater level, raise groundwater expenses and jeopardize the long-term sustainability of agriculture.
- Over-drawing can also cause ecological stress and diminish aquifer resiliency during droughts.
- With the significance of Punjab in agricultural production of India, availability of groundwater could be a major factor that will impact food security at some time in the future.
- More broadly, the crisis raises the issue of the trade-offs between national food security and regional water sustainability.

Way Ahead:

- Expand canal irrigation while ensuring water reaches tail-end farmers.
- Promote crop diversification and less water-intensive crops through better incentives.
- Encourage micro-irrigation, precision irrigation and laser land levelling.
- Strengthen groundwater monitoring, aquifer mapping and local water budgeting.
- Promote water-saving incentives, rainwater harvesting and Managed Aquifer Recharge.
- Ensure participatory groundwater management involving farmers, scientists and government.

Conclusion:

- The state of the groundwater resources in Punjab has made it clear that it is not unlimited and that any policy decisions, especially in agriculture, need to be in relation to ecological sustainability.
- Although the reduction in over-exploited blocks is encouraging, the fact that the level of exploitation is still at 152.22% demonstrates that the crisis is by no means over.
- Irrigation from canals, crop diversification, efficient irrigation, groundwater management and community involvement must all be part of a comprehensive plan to ensure the water security of Punjab.

Source: The DTE

Mains PYQ:

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

2.26 Himalayan Disasters: Tackling GLOFs & Avalanche Risks

Syllabus: Disaster Management [GS 3]

Context:

The Union Ministry of Home Affairs (MHA) has urged the Himalayan States and Union Territories to step up their readiness for Glacial Lake Outburst Floods (GLOFs) and snow avalanches.

Key Highlights:

- The focus is now shifting from the traditional disaster management approach of responding to disaster events to preventive (disaster mitigation), risk-informed (planning), early warning, and preparedness approaches at the community level.
- The review highlighted the vulnerabilities of the four regions of Uttarakhand, Himachal Pradesh, Sikkim, Arunachal Pradesh and Jammu and Kashmir and spoke about the need to develop specific disaster preparedness plans for the region.

Why are Himalayan Regions Vulnerable?

- **Climate change:** Glacial lakes can be created and expanded with the melting of glaciers because of the rise in temperature.
- **Unstable terrain:** Wherever slopes are steep and geological formations unstable, there is the potential for landslides, avalanches and cascading hazards.
- **Infrastructure exposure:** Roads, hydropower plants, bridges, settlements, as well as tourism infrastructure have been increasingly exposed in mountain valleys.
- **Secondary disaster:** GLOF/Avalanche can generate secondary avalanches, debris flow and flash floods, exacerbating the disaster impacts.

Key Preparedness Measures:

- There is a need for ongoing monitoring of the vulnerable glacial lakes and avalanche-prone areas to determine changes in risk conditions.
- The use of satellite observations, remote sensing, ground-based sensors, weather data, and hydrological monitoring should be used in Early Warning Systems (EWS).
- Hazard zonation, flow-path mapping and identification of high-risk areas need to be carried out in advance of disasters by the authorities.
- Alerts need to be disseminated rapidly and effectively via reliable communications systems to local communities and should be directly connected to evacuation plans.
- Regular mock drills and evacuation planning and community awareness programmes can assist in last-mile disaster preparedness.

Institutional Coordination:

- For the effective management of Himalayan disasters, there is a need to coordinate the efforts between the State agencies, district administration, scientific institutions and technical organisations.
- Institutions at the national level, with a focus on disaster management, water resources and meteorology and mountain hazards, can provide scientific inputs and technical support.
- Co-ordination should be continued between agencies and the dissemination of risk information should be translated into prompt preventive action, not just a technical evaluation of the risk.

Significance for India:

- Good preparedness can reduce fatalities, damage to infrastructure, and disruption of essential services in remote parts of the Himalayas.
- Furthermore, it may be helpful for the protection of strategically important roads, hydropower plants and communication systems.
- Rescue and relief work after the disaster will be very challenging in this topography of the Himalayas and thus, a preventive approach will be of utmost importance.
- DRR could be integrated into development of infrastructure in the Himalayas to make it more sustainable and climate-resilient.

Way Ahead:

- Development of multi-hazard early-warning systems in India that can detect GLOFs, Avalanches, landslides, and Flash Floods, which are interconnected hazards.
- To enhance risk assessment, a combination of satellite-based monitoring, ground observations, and real-time sensor networks must be used.
- The location and design of roads, bridges, and hydropower development and of settlements should be determined based on vulnerability mapping.
- The role of district-level officials and communities is to be at the heart of evacuation planning, mock drills and disaster communication.
- Inter-agency coordination and preparation audits on a regular basis should be institutionalised and GLOF mitigation projects should be implemented in a hurry.

Source: **The Indian Express**

Mains PYQ:

Q. Bring out the causes for more frequent landslides in the Himalayas than in Western Ghats. (2013)

2.27 India-Nepal Climate Diplomacy: A Shared Challenge

Syllabus: IR [GS 2]

Context:

The Government of India has recently replied a statement made by the Nepalese Foreign Minister in compensation for the climate disasters. India said that climate change is a collective problem of all countries in the region and it cannot be resolved with bilateral finger pointing. This is an example of how climate justice, transboundary disaster management and local diplomacy are increasingly converging in South Asia.

Key Points of the Problem:

1. Nepal's Stand on Climate Compensation

- Disproportionate Impact: Nepal's GHG emissions are negligible but its impacts are severe, including accelerated glacial melt and flash floods.
- The demand for Climate Justice: In the case of Nepal, the leadership demanded compensation from the major polluters, stating that compensation is required by the vulnerable mountainous countries as it is causing economic and environmental loss and damage.

2. India's Position and Response

- Common Challenge: Ministry of External Affairs (MEA) explained that climate change is a common regional or global challenge not nation specific.
- Focus on Global North: India argues that the bulk of the climate finance and compensation should be borne by the developed world, which is the largest contributor of global emissions.
- Collaborative Framework: India called for cooperation in mitigation measures, capacity development and disaster risk reduction rather than the burden of the developing neighboring countries.

Major Challenges in Regional Climate Diplomacy:

- **Poor Data Sharing:** Limited sharing of hydrological and meteorological data in real time between upstream and downstream countries, which limits early warning systems.
- **Financing Deficit:** The global Loss and Damage Fund remains underfunded, forcing developing nations to compete for scarce resources.
- **Asymmetric Relationships:** India's water management often results in perceptions of neglect or unilateral control in cases of relations with smaller countries such as Nepal.

Way Forward:

1. Strengthening Institutional Frameworks

- Revitalize regional bodies like SAARC or utilize BIMSTEC to create a dedicated South Asian Climate Change Task Force.
- Establish institutional arrangements to monitor glacial lakes collectively.

2. From compensation to cooperation

- Prioritize co-investment in climate smart infrastructure and clean energy transitions.

- India, as a leader in the International Solar Alliance (ISA) and the Coalition for Disaster Resilient Infrastructure (CDRI) can help Nepal in this regard.

3. Joint Advocacy at Global Fora

- India and Nepal should put their demands on developed countries to make good their climate finance pledges of $100 billion per year and effectively implement the Loss and Damage fund.

Source: The Print

UPSC Practice Question:

Q. "Climate change is a shared regional challenge that requires cooperation rather than bilateral blame." Discuss in the context of India-Nepal relations.

2.28 SCO & India: From Soft Power to Strategic Gains

Syllabus: IR [GS 2]

Context:

The Shanghai Cooperation Organisation (SCO), which became an important platform for India to cooperate with the Central Asian countries, is focusing on security issues and promoting strategic connectivity.

Key Highlights:

- India's role in SCO is very special as Central Asian region is also a part of India's 'extended neighbourhood' and has historical, cultural and civilisational ties with India.
- The recently concluded SCO summit discussed issues of terrorism, regional security, connectivity, strategic autonomy and cooperation among the member countries.

Why does the SCO Matter to India?

- **Central Asia Outreach**
  - India's cooperation with Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan is enhanced through the membership of the SCO, which is a high-level institutional forum.
  - Central Asia is geopolitically significant due to its significant oil, natural gas, uranium and critical minerals reserves.
  - There is scope to increase India's involvement in the region, which could play a role in achieving India's energy security and economic diversification.
- **Counter-Terrorism and Security**
  - Prevention of cross-border movement of terrorists and countering terrorism continue to be important priorities of India in the SCO.
  - It serves as a forum for cooperation and dialogue on terrorism, extremism, separatism and regional security issues at the Multilateral level.
  - India can leverage these platforms to strengthen the anti-terrorism stance of the State.
- **Connectivity**
  - Geographically, India is facing a major problem as it can't access Central Asia directly through Pakistan.
  - India is thus looking for other connectivity options, such as Iran's Chabahar Port and the International North-South Transport Corridor (INSTC).
  - Better connectivity can support enhanced trade, energy supply, and economic ties between India and Central Asia/Eurasia.
- **Strategic Autonomy**
  - The SCO provides India an opportunity to interact with various geopolitical groups at the same time, as it gathers the world's major powers, including China, Russia, India and Iran.
  - The presence of the MSV, which is a joint organization of nonaligned countries, is a testament to India's policy of maintaining strategic

autonomy and a multi-aligning mode of approach in terms of national interest.
    - It also helps India to maintain communication with nations that may have conflicts with India on specific geopolitical matters.

India's Central Asian Opportunity:

- India has levers for soft power in Central Asia, owing to historical linkages, cultural contacts, education, traditional medicine, and civilisational linkages.
- The bigger challenge, however, is that of turning this goodwill into economic influence, infrastructure projects, technological partnerships and increased connectivity.
- India has a lot to offer in sectors like Digital Public Infrastructure, fintech, pharmaceuticals, space technology, and Critical minerals, which can open new opportunities for cooperation.
- India would also have opportunities in Central Asia as the region is looking to diversify its external partnerships and move away from becoming too dependent on one major power.

Key Challenges:

- Geographical isolation of India from Central Asia is still a key impediment to greater trade and investment.
- The Belt and Road Initiative (BRI) has left its mark on the region, establishing a significant connectivity and infrastructure footprint.
- With Russia's traditional influence and China's economic ascendancy, India is facing acute strategic competition.
- India will also have to juggle its involvement with SCO with complicated relations with China and Pakistan.

Way Ahead:

- Fast-track Chabahar Port and INSTC to improve connectivity with Central Asia.
- Deepen economic ties in energy, critical minerals, pharma, digital tech, agriculture and education.
- Expand development cooperation, capacity building and people-to-people ties.
- Strengthen cooperation in counter-terrorism, cybersecurity, disaster management and emerging technologies.
- Use a multi-platform approach through SCO, BRICS and India–Central Asia Dialogue.

Source: **The Indian Express**

Mains PYQ:

Q. Critically examine the aims and objectives of SCO. What importance does it hold for India? (2021)

2.29 NCPCR Rescues 3,800+ Children from Child Labour

Syllabus: Governance 7 Social Justice [GS 2]

Context:

The National Commission for Protection of Child Rights (NCPCR) successfully rescued over 3,800 children and registered more than 575 FIRs during its intensive "Pan-India Rescue and Rehabilitation" campaign, which concluded on August 31, 2026. The special drive started on June 12, 2026, intending to address issues of child labour, trafficking, and child exploitation in hotspot areas throughout the country.

Key Highlights of the Campaign:

- **Massive Rescue & Enforcement:** NCPCR has saved more than 3,800 children from child labour and complaints were registered in a total of 575+ FIRs during the Pan-India campaign of Rescue & Rehabilitation.
- **Targeted Monitoring:** States and local authorities were instructed to focus their monitoring on trafficking hotspots and to regularly report on education, compensation, and family restoration.
- **Enhanced Field Coordination:** Periodic review meetings were conducted with district administrations to identify challenges in the field processes, improve coordination, and ensure timely ATRs.
- **Awareness & Outreach:** The campaign aimed to promote reporting of child labour and emphasized the importance of child rehabilitation through the education of rescued children on a large scale using social media.

Strategic Pillars of the Campaign:

- **Focused operations:** Concentrate on high risk areas and industries at risk regarding child trafficking and child exploitation.
- **Inter-Departmental Coordination:** Regular exchanges to eliminate delays in the field, optimize ATRs and improve processes.
- **Data-Driven Monitoring:** Updates on rescues, legal action, compensation and family restoration on a regular basis.
- **Rehabilitation & Awareness:** Emphasis on educational mainstreaming and social reintegration, supported by digital awareness campaigns.

Constitutional Safeguards:

- **Article 21A:** Ensures the fundamental right to free and compulsory education for children aged 6 to 14 years.
- **Article 23:** A ban on human trafficking and forced labour.
- **Article 24:** Prohibits the use of children under the age of 14 in factories, mines, or in any other work that is likely to be dangerous.
- **Article 39(e) & (f) (DPSP):** Directs the State to prevent the abuse of children and ensure they grow up in a healthy environment with dignity.

Legislative Framework:

- **Child and Adolescent Labour (Prohibition and Regulation) Act, 1986 (Amended in 2016):** Total ban on child labour up to 14 years and adolescents between 14 and 18 years in hazardous industries.
- **Juvenile Justice (Care and Protection of Children) Act, 2015:** Established institutional frameworks for the rehabilitation of rescued children in the form of Child Welfare Committees (CWCs).

About NCPCR:

- **Nature:** A statutory body constituted under the Commissions for Protection of Child Rights (CPCR) Act, 2005.
- **Mandate:** To ensure that all laws, policies, programmes and administrative mechanisms reflect the child rights perspective contained in the Constitution of India and UN Convention on the Rights of the Child.

Challenges in Eliminating Child Labour:

- **Socio-economic Factors:** poverty and lack of literacy are ingrained in the mindset of low-income families, turning children into secondary breadwinners.
- **Informal Sector Dominance:** Identifying exploitation is tough because a large majority of child labour happens in unorganized setups like home-based crafts, agriculture, and small roadside eateries.
- **Poor Rehabilitation:** Poor follow-up systems can lead to children who have been rescued falling back into poverty or re-trafficked.

Way Forward:

- **Supporting Decentralized Governance:** Empowering grassroots-level bodies such as Panchayats and Village Child Protection Committees to track child migration and work at the local level.
- **Universal Social Protection:** Scale up safety nets such as direct cash transfers and PM POSHAN to cushion vulnerable families against economic shocks.
- **Strict Enforcement:** Strengthen prosecutions of employers with the creation of speedy courts for child trafficking crimes.

Source: The Hindu

UPSC Mains Practice Question:

Q. Examine the major challenges in eliminating child labour in India despite the existence of a comprehensive legal framework.