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FOR UPSC CIVIL SERVICE EXAMINATION

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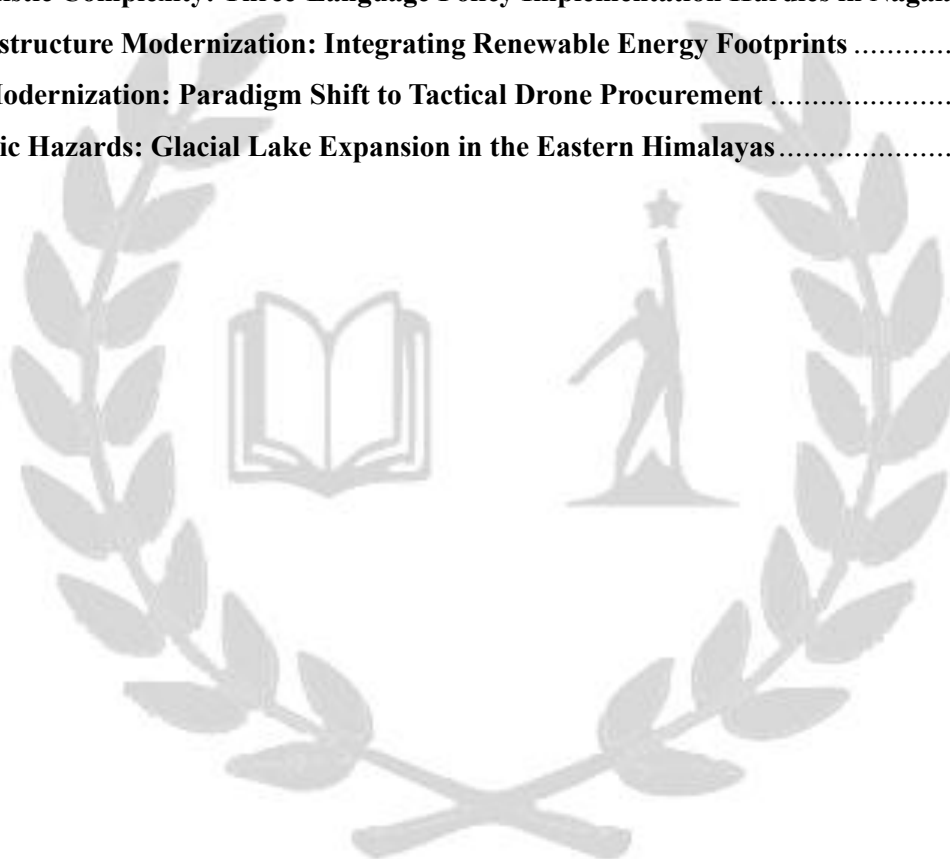
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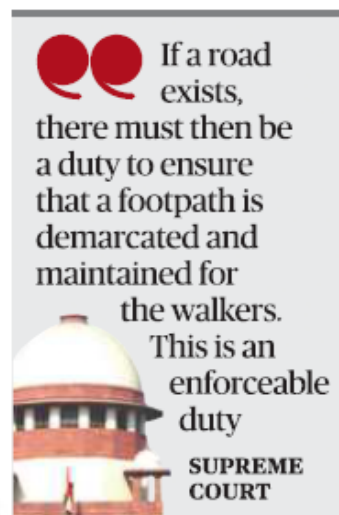


VIDHVATH IAS ACADEMY



1. Right to Walk as a Fundamental Right: SC Judgment

- **Core Judicial Pronouncement:** The Supreme Court declared the freedom to walk on demarcated, well-maintained footpaths a fundamental right, establishing that pedestrian safety overrides the privileges of motorised vehicles.
- **Enforceable Statutory Framework:** Authoring the judgment, Justice P.S. Narasimha emphasised the urgent need for a statutory framework to formally recognise the right to walk and clearly identify "duty-bearers" legally responsible for road infrastructure.
- **Constitutional Nexus:** The ruling expands the horizon of **Article 21 (Right to Life and Personal Liberty)**, elevating safe, carefree pedestrian movement along wide footpaths—free from lurking dangers—to the level of a basic, non-negotiable human right.
- **Origin of the Case:** The landmark judgment was delivered in response to a tragic incident where a five-year-old boy was crushed to death by a truck while walking to school with his father, highlighting severe systemic gaps in pedestrian infrastructure.
- **Enforceable State Duty:** The apex court ruled that if a public road exists, the state has an absolute, enforceable duty to ensure that footpaths are properly demarcated and maintained for walkers.



Key Definitions & Legal Framework

- **Duty-Bearers:** Municipal authorities, state public works departments (PWD), and National Highway authorities legally bound to construct, maintain, and protect pedestrian infrastructure.
- **Article 21 Expansion:** The judiciary implicitly links the right to clean, obstacle-free walking spaces to the right to a dignified life, safe livelihood, and freedom of movement under **Article 19(1)(d)**.
- **Motor Vehicles (Amendment) Act, 2019:** While the Act focuses on road safety and strict penalties, this judgment adds a constitutional obligation to prioritize pedestrian infrastructure over vehicular speed.

Conclusion

This judgment marks a paradigm shift from vehicle-centric urban planning to pedestrian-centric rights. By treating footpath maintenance as an enforceable legal duty rather than a policy choice, the Supreme Court challenges systemic apathy in urban governance, setting a vital precedent for municipal accountability and sustainable, walkable cities.

UPSC Relevance

- **GS Paper II:** Structure, organization, and functioning of the Judiciary; Judicial activism; Evolution of Fundamental Rights under Article 21.
- **GS Paper III:** Infrastructure (Urban Transport); Road Safety and Traffic Management challenges in India.
- **Prelims Focus:** Landmark Supreme Court judgments expanding Part III of the Constitution; Statutory duties of urban local bodies.



2. Dragon Boat Festival: Cultural Heritage & Transnational Significance

Key Summary Points

- **Historical and Cultural Genesis:** The Dragon Boat Festival (Duanwu Festival), dating back over 2,000 years, is celebrated on the fifth day of the fifth month of the Chinese lunisolar calendar. It originates from ancient health, disease prevention, and ecological harmony rituals coinciding with the summer solstice.
- **Societal Rituals and Commemoration:** The festival fundamentally honors the ancient patriotic poet Qu Yuan. Key traditional practices include organizing synchronized dragon boat races, consuming *zongzi* (glutinous rice dumplings), wearing five-colored ward-off-evil bracelets, and fumigating homes with medicinal mugwort leaves.
- **Global and Institutional Recognition:** In 2009, it became China's first traditional festival to be inscribed on the **UNESCO Representative List of the Intangible Cultural Heritage of Humanity**, cementing its stature in global heritage diplomacy.
- **Geopolitical & Transnational Manifestation:** The festival reflects a shared historical memory across East Asia. Parallel traditions exist, such as South Korea's *Gangneung Danoje* festival (inscribed by UNESCO in 2005), which highlights both regional cultural synthesis and contemporary soft-power competition.
- **Socio-Economic Drive:** Beyond its cultural ethos, the festival acts as an economic catalyst, driving massive seasonal domestic tourism, supporting indigenous handicraft industries (such as traditional wooden boat building), and fostering international cultural exchange.



Key Definitions

- **Intangible Cultural Heritage (ICH):** Oral traditions, performing arts, social practices, rituals, festive events, knowledge, and skills that communities recognize as part of their cultural heritage.
- **Zongzi:** Pyramid-shaped sticky rice dumplings wrapped in bamboo or reed leaves, historically used as ritualistic offerings to prevent marine life from consuming Qu Yuan's body.

Constitutional & Legal Frameworks (Indian Context)

While the festival is indigenous to East Asia, the protection of cultural practices aligns with fundamental principles under the **Constitution of India**:

- **Article 29(1):** Guarantees any section of citizens residing in India having a distinct language, script, or culture the right to conserve the same.
- **Article 51A(f):** Imposes a Fundamental Duty on every citizen to value and preserve the rich heritage of the country's composite culture.
- **UNESCO 2003 Convention:** Both India and China are signatories to the Convention for the Safeguarding of the Intangible Cultural Heritage, driving institutional frameworks for mapping and preserving non-material heritage.

Conclusion

The Dragon Boat Festival illustrates how ancient folklore and health-preservation rituals transform into pillars of modern cultural diplomacy and economic vitality, balancing traditional preservation with globalized sport.



UPSC Relevance

- **GS Paper I (Art & Culture):** Important for comparative analysis of global intangible heritages, philosophical links with nature, and UNESCO frameworks.
- **GS Paper II (International Relations):** Relevant to soft power dynamics, cultural diplomacy, and heritage-related bilateral contentions in East Asia.

3. India-Russia Strategic Energy Relations: Surge in Crude Imports

Key Summary Points

- **Record Crude Import Surge:** Driven by supply disruptions in West Asia, India's crude oil imports from Russia are projected to hit an all-time monthly high of 2.66 million barrels per day (bpd) in June 2026, accounting for a massive 53.5% of India's total crude imports.
- **Geopolitical Disruptions in West Asia:** The escalation of the West Asian war has severely impacted traditional supply routes, leaving vessels like the Qatari LNG carrier *Disha* stranded in the Persian Gulf for over three months before navigating the crucial Strait of Hormuz.
- **Lapse of US Sanctions Waiver:** The unprecedented high in Russian imports comes despite the United States letting its sanctions waiver on Russian oil purchases lapse, demonstrating India's strategic autonomy in prioritizing its domestic energy security.
- **Refinery Structural Alignment:** Industry experts indicate that discounted Russian crude has firmly transitioned from a temporary alternative to the structural mainstay of Indian refiners' "crude diet" for the foreseeable future.
- **Strategic Maritime Chokepoints:** The crisis underscores the vulnerability of global energy transit routes, particularly the Persian Gulf and the Strait of Hormuz, emphasizing the critical need for India to diversify supply channels and secure strategic maritime corridors.

Key Definitions

- **Barrels Per Day (bpd):** A standard metric used to measure the daily production, delivery, or consumption of crude oil and petroleum products (1 barrel equals approximately 159 liters).
- **Strategic Autonomy:** A foreign policy framework wherein a nation maintains independence in its decision-making processes to safeguard core national interests, resisting external diplomatic or economic pressures.



Constitutional, Legal & Institutional Frameworks

While international trade agreements fall within the executive domain, specific institutional and constitutional provisions govern India's energy and foreign policy architecture:

- **Article 73:** Extends the executive power of the Union to matters with respect to which Parliament has power to make laws, including entering into international treaties and trade agreements.
- **Union List (Seventh Schedule):** Entry 25 (Maritime shipping and navigation), Entry 53 (Regulation and development of oilfields and mineral oil resources), and Entry 10 (Foreign affairs) vest absolute legislative jurisdiction with the Parliament.



- **Petroleum and Natural Gas Regulatory Board (PNGRB) Act, 2006:** The statutory framework ensuring the uninterrupted supply of petroleum and petroleum products across the nation during geopolitical emergencies.

Conclusion

India's surging reliance on Russian crude reflects a pragmatic alignment of economic necessity and geopolitical balancing. Navigating Western sanctions while securing energy infrastructure amid West Asian volatility highlights New Delhi's calculated strategy to stabilize domestic fuel prices and ensure macroeconomic resilience.

UPSC Relevance

- **GS Paper II (International Relations):** Bilateral relations involving India, Russia, and the US; impact of global sanctions on India's strategic autonomy; energy diplomacy and security of maritime chokepoints like the Strait of Hormuz.
- **GS Paper III (Indian Economy & Infrastructure):** Energy security, managing the current account deficit (CAD) via discounted commodity pricing, and supply chain resilience under global disruptions.

4. Jurisprudential Milestone: Right to Walk Declared a Fundamental Right

Key Summary Points

- **Constitutional Elevation:** In a landmark ruling (*Maniyar Iliyaz v. P. Ayyappan*, June 2026), the Supreme Court formally declared the **Right to Walk on safe, secured, and demarcated footpaths** a Fundamental Right under Part III of the Constitution.
- **Priority Over Motorized Class:** The Bench comprising Justices P.S. Narasimha and Atul S. Chandurkar held that pedestrian rights are primary, preceding the right to move on wheels, and must take absolute precedence over motorized vehicular traffic.
- **Correlative Public Duty:** The apex court established that the physical existence of a road casts an enforceable, non-negotiable legal obligation on local authorities to construct, demarcate, and safeguard contiguous pedestrian infrastructure.
- **Independent Judicial Remedies:** Violations of this right entitle citizens to public law remedies, including compensation and restitution against default civic bodies. Crucially, these constitutional remedies operate independently of the statutory claims under the Motor Vehicles Act, 1988.
- **Catalyst for Legislative Reform:** Critiquing the historical marginalization of pedestrians in urban design—termed a "civilisational problem"—the Court directed the Law Commission and Union Ministries to examine a dedicated statutory framework and appoint a full-time regulator to enforce pedestrian safety.

Key Definitions

- **Correlative Duty:** A legal concept where the recognition of a specific right for an individual inherently creates an enforceable, mandatory obligation on another party (in this case, the state or municipal authorities) to respect and fulfill that right.
- **Continuing Constitutional Exercise:** A judicial mechanism where a court does not dispose of a case after a single verdict but converts it into a continuing writ (renamed here under Article 32 as "*Re: Fundamental Right to Walk and Footpath*") to periodically monitor administrative compliance.



Constitutional & Statutory Frameworks

The Supreme Court structured the Right to Walk by weaving together multiple constitutional provisions and highlighting statutory deficits:

- **Article 19(1)(d) (Freedom of Movement):** Identified as the primary bedrock, ensuring that the constitutional freedom to move across India includes the prerequisite to move safely on foot.
- **Article 21 (Right to Life and Liberty):** Interlinked to affirm that walking is integral to human life, personal liberty, and dignity, which cannot be compromised by hazardous urban planning.
- **Articles 19(1)(a), (b), and (c):** Connected to the right to walk as safe common spaces are structurally essential for citizens to exercise free expression, peaceful assembly, and association.
- **Seventh Schedule (Local Governance):** Reaffirms the statutory accountability of State and local duty bearers under Entry 5 of the State List (Local Government, including municipal corporations and district boards).

Conclusion

By elevating the right to walk to a fundamental constitutional guarantee, the Supreme Court has reordered the priorities of Indian urban governance. The ruling shifts the narrative from mere civic convenience to an enforceable human right, challenging the "monopoly of the motorized class" and demanding equitable redistribution of public spaces.

UPSC Relevance

- **GS Paper II (Polity & Governance):** Judicial activism and the expansion of Fundamental Rights by the Supreme Court; devolution of powers and functional challenges of Urban Local Bodies (ULBs) under the 74th Constitutional Amendment Act.
- **GS Paper III (Urbanization & Infrastructure):** Sustainable urban planning, pedestrian safety, road transport infrastructure, and the socioeconomic challenges of managing public space encroachments.

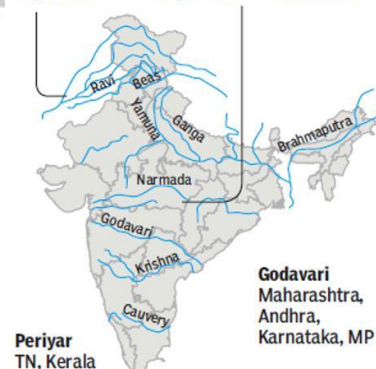
5. Inter-State Water Dispute: Punjab and Haryana Rift Over Malwa Canal

Key Summary Points

- **Emergence of Fresh Dispute:** A geopolitical rift has surfaced between Punjab and Haryana at the 22nd Standing Committee meeting of the Northern Zonal Council over Punjab's proposed Malwa irrigation canal project.
- **Core Contention over DPR:** Haryana officials demanded immediate access to the Detailed Project Report (DPR) to assess the technical parameters, whereas Punjab maintains the canal is entirely an intra-state project, leaving Haryana with no locus standi.
- **Project Specifications and Source:** The proposed infrastructure aims to provide critical irrigation facilities to four major districts in Punjab's Malwa belt by drawing water directly from the Harike Barrage.
- **Challenge to BBMB Assessments:** Punjab has formally challenged the water measurement methodologies used by the Bhakra Beas Management Board (BBMB), questioning the reliability of data regarding available reservoir volumes.

Other major inter-state river disputes

Ravi & Beas States fighting Punjab, Haryana, Rajasthan	Narmada MP, Gujarat, Maharashtra, Rajasthan	Krishna Maharashtra, Andhra, Karnataka
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- **Call for Cooperative Federalism:** Highlighting the shared administrative lineage of the member states, Union institutional representatives emphasized utilizing the Zonal Council platform to foster cooperative federalism and collaborative river basin management.

Key Definitions

- **Zonal Councils:** Statutory bodies established under the States Reorganisation Act, 1956, to promote interstate cooperation, coordinate policies, and resolve regional disputes under the chairmanship of the Union Home Minister.
- **Detailed Project Report (DPR):** A comprehensive master document detailing the architectural, financial, engineering, legal, and environmental feasibility parameters of an infrastructure project before its execution.

Constitutional & Legal Frameworks

Inter-state water management and regional resolution mechanisms are governed by explicit constitutional vectors:

- **Article 262:** Empowers Parliament to adjudicate disputes relating to waters of inter-state rivers or river valleys, effectively barring the jurisdiction of the Supreme Court in such matters when statutory tribunals are enacted.
- **Inter-State River Water Disputes Act, 1956:** The statutory tool enacted under Article 262 enabling the Center to constitute tribunals for resolving deep-seated riparian conflicts.
- **Seventh Schedule Allocation:** Reflects a federal friction point between Entry 17 of the State List (Water supplies, irrigation, and canals) and Entry 56 of the Union List (Regulation and development of inter-state rivers and river valleys).

Conclusion

The Malwa canal friction highlights the growing challenge of managing dwindling hydrological resources in competitive agricultural zones. Resolving these repetitive disputes requires shifting from rigid political positioning toward data-driven, institutional collaboration within statutory bodies like the Zonal Councils.

UPSC Relevance

- **GS Paper II (Polity & Governance):** Federal structure, functions, and challenges of Inter-State and Zonal Councils; mechanisms of conflict resolution under Article 262.
- **GS Paper III (Geography & Economics):** Water resource management, irrigation infrastructure planning, agricultural sustainability, and the economic impact of regional ecological disputes.

6. Energy Security: Vulnerabilities Exposed by the Strait of Hormuz Blockade

Key Summary Points

- **Unprecedented Macroeconomic Shock:** The 2026 blockade of the Strait of Hormuz caused Brent crude to surge 63.3%, severely disrupting global energy supply networks and exposing structural gaps in India's import dependencies.
- **Asymmetric Hydrocarbon Exposure:** India depends on foreign imports for more than 88% of its total crude requirements. Prior to the war, approximately 40% of India's crude imports, 60% of its consumed LPG, and 55% to 60% of its LNG transited through this single maritime chokepoint.



- **Compounded Stagflationary Burdens:** The blockade produced a twin price and supply shock. While April crude import volumes fell 4.3% year-on-year, total procurement outlays escalated by 52.3%, feeding a wholesale inflation rate of 8.3% and expanding the merchandise trade deficit to \$28.38 billion.
- **Severe Domestic Supply Contractions:** Diversifying gas supplies proved technically difficult, causing LNG imports to shrink 29.6% year-on-year in April and forcing critical downstream fertilizers, city gas networks, and industrial consumers to absorb severe deficits.
- **Monetary Policy Trilemma:** The crisis strained the Reserve Bank of India's operational space. The central bank faced a choice between raising rates to contain imported inflation (jeopardizing domestic growth) or selling dollars to defend the sliding rupee (depleting forex reserves by 6.4%).



Key Definitions

- **Maritime Chokepoint:** A narrow, strategic geographic channel connecting major water bodies that handles high volumes of global shipping traffic and is highly vulnerable to military blockades or physical disruptions.
- **Policy Trilemma (The Impossible Trinity):** A macroeconomic theory stating that a central bank cannot simultaneously maintain a fixed foreign exchange rate, free capital movement, and an independent monetary policy.

Constitutional, Legal & Institutional Frameworks

Securing energy assets and mitigating transnational supply chain risks involve key domestic legal and constitutional architectures:

- **Article 246 (Seventh Schedule - Union List):** Grants exclusive legislative powers to Parliament over Entry 53 (Regulation and development of oilfields and mineral oil resources) and Entry 56 (Regulation of inter-state rivers and river valleys, impacting national grid dynamics).
- **Energy Conservation Act, 2001 (Amended 2022):** Provides the framework for scaling up renewable energy adoption, mandates green hydrogen targets, and establishes carbon markets to transition industrial feedstocks away from imported petroleum.
- **Strategic Petroleum Reserves (ISPR):** Managed by the Ministry of Petroleum and Natural Gas, this institutional framework mandates maintaining underground crude stockpiles to protect the domestic economy from unexpected maritime or geopolitical supply disruptions.

Conclusion

While the reopening of the Strait of Hormuz will ease immediate price pressures, the 2026 crisis underscores the risk of relying heavily on a single transit corridor. Long-term macroeconomic stability requires broader geographic sourcing from Russia, the Americas, and Africa, paired with an aggressive shift toward domestic renewables, electric mobility, and biofuels.

UPSC Relevance

- **GS Paper II (International Relations):** Geopolitics of West Asia, maritime security, protection of global chokepoints, and the impact of regional conflicts on India's strategic energy decisions.



- **GS Paper III (Indian Economy & Energy Security):** Inflation management, supply chain resilience, handling trade deficits, and transitioning toward energy independence under the net-zero framework.

7. Climate Change & Public Health: Heatwave-Induced Ground-Level Ozone Pollution

Key Summary Points

- **Toxic Environmental Synergy:** A pioneering study titled '*Heatwaves trigger severe surface ozone pollution in India*' reveals that extreme heat waves accelerate chemical reactions that significantly elevate ground-level ozone (O_3) concentrations.
- **Quantifiable Mortality Burden:** In 2024 alone, over 830 domestic deaths were directly attributed to heatwave-induced surface ozone spikes, aggravating severe cardio-respiratory conditions.
- **Geographic Vulnerability Hotspots:** While the globally accepted safe baseline concentration is 30 ppb, background levels across India average 50-55 ppb, with acute concentrations clustered heavily over northwestern India and the Indo-Gangetic Plains.
- **Persistent Atmospheric Residency:** Secondary pollutant concentrations do not dissipate immediately when ambient temperatures drop; rather, elevated levels persist for 3-4 days after a heatwave ends.
- **Institutional Monitoring Gaps:** The study underscores the immediate necessity for regulatory bodies like the Central Pollution Control Board (CPCB) and the India Meteorological Department (IMD) to extensively monitor and integrate surface ozone metrics into public health alert systems.

Heatwaves leading to increased concentrations of ground-level ozone: Study



Key Definitions

- **Ground-Level (Surface) Ozone:** A harmful secondary pollutant formed in the troposphere when primary precursor emissions—specifically Nitrogen Oxides (NO_x) and Volatile Organic Compounds (VOCs)—chemically react under intense sunlight and high temperatures.
- **Parts Per Billion (ppb):** A volumetric unit of measurement used to quantify the concentration of trace contaminants or pollutants present within the atmosphere.

Constitutional & Legal Frameworks

Environmental preservation and public health safety are strongly anchored within India's foundational legal structures:

- **Article 21 (Right to Life):** Historically expanded by the judiciary to encompass the fundamental right to clean air, a pollution-free environment, and comprehensive protection against climate-induced health hazards.
- **Article 48A (Directive Principles):** Directs the State to protect and improve the environment and safeguard the public wild spaces and ecological stability of the country.
- **Article 51A(g) (Fundamental Duty):** Mandates every citizen to protect and improve the natural environment, including forests, lakes, rivers, and wildlife.



- **The Air (Prevention and Control of Pollution) Act, 1981:** The primary statutory framework empowering the CPCB to set ambient air quality standards and penalize industrial or vehicular precursor emissions.

Conclusion

The compounding impact of heatwaves and surface ozone marks a complex public health challenge. Mitigating this invisible threat requires shifting beyond traditional heat-action plans toward aggressive industrial emissions management, urban greening to lower ambient temperatures, and integrated air quality forecasting.

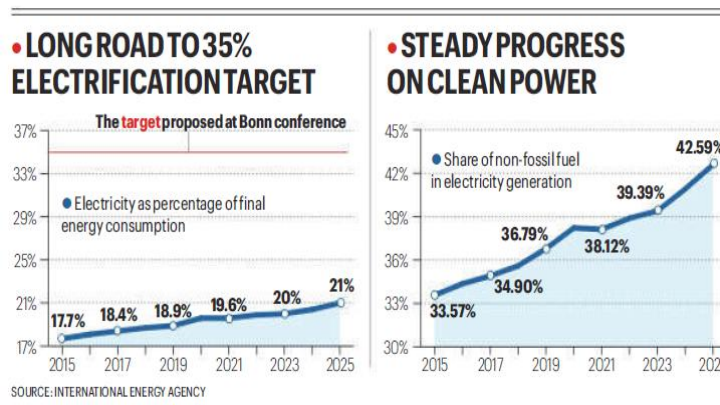
UPSC Relevance

- **GS Paper III (Environment & Disaster Management):** Secondary air pollution dynamics, heatwave management, environmental degradation, and institutional roles of the CPCB and IMD.
- **GS Paper II (Governance & Public Health):** Public healthcare infrastructure vulnerabilities, implementation of National Clean Air Programme (NCAP) mandates, and constitutional protections under Article 21.

8. Global Energy Transition: The Challenge of Electrification in Climate Targets

Key Summary Points

- **The Bonn Electrification Proposal:** At the mid-year climate talks in Bonn, Germany, a notable proposal emerged from Turkey suggesting that the world should aim to meet at least one-third (35%) of its final energy needs from electricity by 2035 to systematically curb global emissions.
- **The Reality Gap in Consumption:** While renewable capacity is scaling up, electricity accounted for only 21% of the world's Total Final Energy Consumption (TFEC) in 2025. In India, the corresponding figure stands slightly higher at approximately 23%.
- **Stagnant Share of Clean Power:** Globally, around 42.59% of electricity was generated through clean sources (renewables, hydro, and nuclear) by 2025. This implies that over 57% of current electrical power is still generated by burning fossil fuels, heavily undercutting the net benefits of electrification.
- **Hard-to-Abate Sector Bottlenecks:** Complete energy transition faces immense technological hurdles in core industrial sectors such as shipping, aviation, heavy-duty long-haul trucking, steel, iron, cement, glass, and specialized high-temperature manufacturing processes that cannot easily run on electricity.
- **The Investment Deficit:** According to the International Renewable Energy Agency (IRENA), achieving a 35% electrification rate by 2035 to maintain a 1.5°C pathway demands an annual global investment of approximately \$1.2 trillion injected directly into electrical grids, battery storage, and infrastructure expansion.





Key Definitions

- **Total Final Energy Consumption (TFEC):** A metric tracking the total energy explicitly consumed by end-users (such as households, industry, and transport) in its final usable form, excluding the energy used by the energy sector itself for transformation or distribution losses.
- **Hard-to-Abate Sectors:** Heavy industries and heavy-duty transport sectors where carbon emissions are structurally or technologically difficult to reduce or eliminate due to a lack of viable, cost-effective non-fossil alternatives.

Constitutional & Statutory Frameworks (Indian Context)

India's aggressive domestic pushes toward grid modernization, green energy storage, and vehicle electrification operate under explicit legal mandates:

- **Article 48A (Directive Principles):** Directs the State to protect and improve the environment, serving as the constitutional foundation for shifting away from highly polluting fossil fuel dependence.
- **The Energy Conservation Act, 2001 (Amended 2022):** Provides the statutory backbone for establishing carbon credit trading markets, regulating energy consumption standards, and mandating minimum clean energy usage fractions for large commercial and industrial consumers.
- **The Electricity Act, 2003:** Governs national grid integration, electricity generation, transmission, and cross-border distribution, heavily influencing the deployment of grid-scale renewable energy storage and rooftop solar systems.

Conclusion

Electrification represents the core architecture of an authentic global green energy transition. However, simply switching infrastructure to run on electricity is insufficient if the underlying power grid relies on coal and gas; true decarbonization demands a synchronized scaling up of clean power generation alongside breakthroughs in hard-to-abate industrial processes.

UPSC Relevance

- **GS Paper III (Environment & Infrastructure):** Renewable energy transition targets, international climate negotiations (UNFCCC COP frameworks), challenges of global electrification, and long-term sustainable infrastructure financing.
- **GS Paper II (International Relations):** Geopolitics of global energy diplomacy, international standard-setting bodies (IRENA, IEA), and bilateral technology transfers for high-temperature clean manufacturing.

9. Socio-Linguistic Complexity: Three-Language Policy Implementation Hurdles in Nagaland

Key Summary Points

- **Institutional Resistance to R3:** Principals from Central Board of Secondary Education (CBSE) affiliated schools in Nagaland have formally petitioned the Union Education Ministry highlighting deep practical difficulties in executing the compulsory three-language formula.
- **Absence of a Dominant Unifying Native Language:** Unlike major linguistic states in mainland India, Nagaland lacks a singular indigenous tongue. The state is home to over 17 major recognized tribes and dozens of sub-tribes, each preserving independent languages and distinct oral traditions.



- **Extreme Micro-Linguistic Diversity:** Urban and semi-urban classrooms present a unique administrative challenge, where a single instructional space frequently contains students speaking over 30 separate tribal languages (such as Ao, Angami, Sumi, Lotha, and Konyak).
- **Role of English as the Lingua Franca:** Due to the staggering tribal linguistic fragmentation, English serves as the sole shared language of communication and the practical administrative medium across diverse communities in formal educational settings.
- **Disruption of Foreign Language Pathways:** The abrupt mandate to enforce native Indian languages from Class 6 onwards, including the proposed introduction of Sanskrit, faces logistical deficits and threatens to cause a severe discontinuity for students already enrolled in global languages like French, German, or Spanish.



Key Definitions

- **Three-Language Formula (R3):** A language learning policy framework first formulated in 1968 and reaffirmed by the National Education Policy (NEP) 2020, mandating the study of three distinct languages in school, including at least two languages native to India.
- **Lingua Franca:** A systematically adopted common language utilized to facilitate routine communication, trade, and instruction between population groups who speak mutually unintelligible native tongues.

Constitutional & Legal Frameworks

The administrative friction over educational linguistic mandates connects directly to several core constitutional provisions designed to protect regional minorities:

- **Article 29(1) (Fundamental Right):** Grants any section of citizens residing in India possessing a distinct language, script, or culture of its own the unalienable right to conserve the same.
- **Article 350A (Directive Principle):** Directs every State and local authority to endeavor to provide adequate facilities for instruction in the mother-tongue at the primary stage of education to children belonging to linguistic minority groups.
- **Article 371A (Special Provisions for Nagaland):** Protects religious or social practices of the Nagas and customary laws, granting significant regional legislative autonomy that indirectly influences structural socio-cultural policies.
- **Eighth Schedule:** Lists the 22 official languages of India; notably, English—the official language of Nagaland—is not included within this schedule, creating an implementation paradox for federal structural guidelines.

Conclusion

The structural opposition to the uniform enforcement of the three-language policy in Nagaland underlines the limit of centralized educational mandates within complex, asymmetrical federal structures. Effective policy execution requires flexible frameworks that honor sub-national, micro-linguistic realities rather than applying rigid pedagogical standards.



UPSC Relevance

- **GS Paper II (Polity & Governance):** Issues and challenges pertaining to the federal structure; functional autonomy of Sixth Schedule regions and Article 371A provisions; implementation challenges of the National Education Policy (NEP) 2020.
- **GS Paper I (Indian Society & Diversity):** Linguistic diversity, regionalism, tribal integration challenges, and preservation of indigenous identity within the modern nation-state framework.

10. Grid Infrastructure Modernization: Integrating Renewable Energy Footprints

Key Summary Points

- **Transmission Capacity Bottleneck:** Although India expanded its renewable capacity by over 45 GW in 2025, more than 50 GW of completed clean energy remains stranded because project installation takes 12–18 months, whereas grid building requires 3–5 years due to multi-agency approvals and land conflicts.
- **Storage-Led Grid Optimization:** Most renewable assets utilize their transmission links only 25% of the time, sitting idle at night. Co-locating utility-scale battery storage can double or triple wire utilization, instantly unlocking up to 400 GW of clean energy without requiring fresh transit corridors.
- **Repurposing Thermal Infrastructure:** Strategically co-locating solar and wind installations near underutilized or aging coal-fired plants allows developers to exploit existing, vacant transmission links, providing up to 100 GW of grid capacity without acquiring new transmission land.
- **Substation and Material Upgrades:** Upgrading current substations can integrate an additional 100 GW of power, while substituting traditional cables with domestically manufactured high-temperature, low-sag conductors can nearly double the power transmission capacity of existing transmission towers.
- **Future-Proofing Grid Strategy:** To handle the estimated 2,000 GW of renewables required by 2050, India is executing a 40% grid expansion costing over \$100 billion, emphasizing the need to shift regulatory incentives to prioritize advanced transmission materials and coordinated renewable energy zones.



Key Definitions

- **High-Temperature, Low-Sag (HTLS) Conductors:** Advanced metallurgical power lines capable of carrying up to two times the electrical current of conventional aluminum conductors at higher operational temperatures while resisting thermal stretching and physical sagging.
- **Firm Clean Power:** Intermittent renewable electricity (solar or wind) that has been combined with energy storage systems or alternative baseloads to guarantee a stable, predictable, and uninterrupted power supply to the grid.

Constitutional & Statutory Frameworks

The structural transition from centralized fossil power to distributed renewable transmission operates within explicit constitutional and legislative domains:



- **Seventh Schedule (Concurrent List - Entry 38):** Places "Electricity" under concurrent jurisdiction, requiring synchronized state-level execution of central grid guidelines and storage procurement rules.
- **The Electricity Act, 2003 (Section 3 & 4):** Empowers the Central Government to formulate the National Electricity Policy and National Tariff Policy, which govern grid integration, cross-border transmission, and open-access protocols for power evacuation.
- **Article 246A & Interstate Commerce:** Governs the complex interstate wheeling of power from high-potential renewable states (e.g., Rajasthan, Gujarat) to major industrial consumption centers via the Inter-State Transmission System (ISTS).

Conclusion

Building additional physical lines will no longer suffice to solve India's clean energy grid constraints. Transforming existing networks into high-capacity clean-energy superhighways via battery integration and technological retrofitting offers a low-conflict, rapid path to overcome transmission bottlenecks and sustain long-term industrial growth.

UPSC Relevance

- **GS Paper III (Infrastructure & Energy):** Renewable energy targets, transmission and distribution (T&D) losses, grid security, and the integration of battery energy storage systems (BESS).
- **GS Paper II (Governance & Policy):** Federal regulatory challenges in state-level distribution company (DISCOM) reforms and implementing national clean energy mandates.

11. Military Modernization: Paradigm Shift to Tactical Drone Procurement

Key Summary Points

- **Strategic Procurement Shift:** India's planned \$2 billion domestic procurement marks a transition from high-value, sophisticated platforms (like fighter jets) to smaller, decentralized, and "attributable" tactical uncrewed systems.
- **Asymmetric Asymmetric Economics:** Recent geopolitical conflicts demonstrate that deploying large volumes of cheap, micro/nano, or First-Person-View (FPV) drones forces adversaries into a negative cost exchange, where interception costs heavily outweigh the drone's manufacturing price.
- **Rapid Technological Obsolescence:** Unlike traditional capital platforms that remain competitive for decades, tactical military drones can become obsolete within two to three years due to agile electronic warfare (EW) countermeasures and counter-drone jamming adaptations.
- **Civil-Military Innovation Synergy:** Progress in the defense drone segment is deeply tied to civilian commercial hardware breakthroughs, necessitating collaborative, iterative research models across industry, academia, and armed forces.
- **Transition to Managed Service Contracts:** To bypass rigid transactional tenders, experts advocate for long-term managed service agreements mimicking IT software infrastructure, which secure continuous upgrade pathways, software iterations, and wartime industrial surge capacity.





Key Definitions

- **Attritable Systems:** Military assets designed to be cheap enough to be risked and routinely lost in combat operations without causing crippling financial or structural damage to the armed forces.
- **Commercial-Off-The-Shelf (COTS):** Standard, commercially available technology products that can be procured directly and retrofitted for specialized tactical operations without requiring bespoke defense R&D.

Constitutional & Statutory Frameworks

The structural transition from importing capital assets to nurturing domestic defense technology operates under clear constitutional and administrative mechanisms:

- **Seventh Schedule (Union List):** Entry 1 (Defense of India) and Entry 2 (Naval, military and air forces) grant the Parliament exclusive legislative and executive authority to structure defense acquisition and domestic production rules.
- **Defence Acquisition Procedure (DAP):** The premier regulatory manual governing defense procurement. Modern versions include special windows for COTS assimilation, indigenous technology components (IDDM), and fast-tracked testing pathways.
- **Defence Procurement Manual (DPM):** Handles revenue procurement and operational maintenance, featuring financial cushions designed for unexpected repairs, field-level upgrades, and component modifications.

Conclusion

India's multi-billion dollar domestic drone push reflects an understanding of modern asymmetric warfare. Maximizing this investment requires evolving from rigid, transactional hardware buyer-seller relationships into agile contractual partnerships capable of continuous software and material updates.

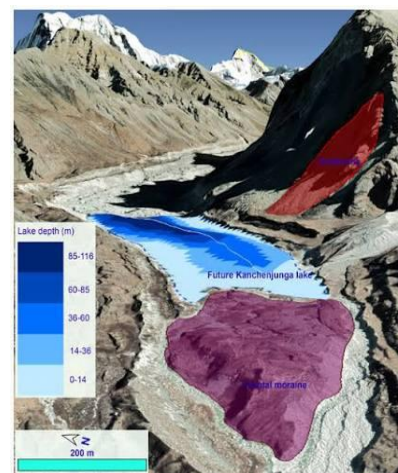
UPSC Relevance

- **GS Paper III (Security & Technology):** Indigenization of technology, indigenizing defense manufacturing, asymmetric warfare, and challenges of electronic warfare in border management.
- **GS Paper II (Governance & Policy):** Public procurement reforms, ease of doing business in defense R&D, and implementing self-reliance policies.

12. Cryospheric Hazards: Glacial Lake Expansion in the Eastern Himalayas

Key Summary Points

- **Accelerated Glacial Retreat:** A satellite-based geospatial assessment of five high-risk glacial lakes in the Mago Chu basin of Tawang district, Arunachal Pradesh, revealed that four lakes have expanded significantly between 2016 and June 2026 due to climate-induced meltwater storage.
- **Hotspot Identification:** Sanhapo Lake demonstrated the most acute expansion, growing by 10 hectares from its 2019 baseline of 78.07 hectares to reach 88.81 hectares by mid-June 2026, marking it as a highest-priority zone for hazard modeling.
- **Risk Categorization:** The studied water bodies are officially classified by the National Disaster Management Authority (NDMA)





as "high-risk" or "very high-risk," situated amid heightened scientific evaluation following the catastrophic October 2023 South Lhonak Lake disaster in Sikkim.

- **Limitations of Standalone Satellites:** Glaciologists emphasize that a mere increase in area over a decade is an insufficient standalone indicator of an impending disaster; true vulnerability is dictated by structural moraine stability, landslide frequencies, and rockfall triggers.
- **Institutional Early-Warning Deficit:** The study calls for converting satellite intelligence into actionable, ground-level risk mitigation frameworks, highlighting the critical challenge of translating advanced remote sensing data into practical early-warning systems for remote border regions.

Key Definitions

- **Glacial Lake Outburst Flood (GLOF):** A sudden, catastrophic release of meltwater from a glacial lake, occurring when an unstable natural dam composed of loose moraine rock, ice, or debris breaches under hydrostatic pressure, avalanches, or seismic activity.
- **Moraine:** An accumulation of unconsolidated earth, rock, and glacial debris deposited by a moving glacier, which frequently acts as a fragile, non-engineered retaining wall for glacial lakes.

Constitutional, Legal & Institutional Frameworks

Disaster mitigation and environmental monitoring in strategic border ecological zones are anchored within the following frameworks:

- **The Disaster Management Act, 2005:** The overarching statutory framework empowering the NDMA and State Disaster Management Authorities (SDMAs) to design mandatory guidelines, hazard zoning maps, and mitigation response protocols for cryospheric emergencies.
- **Article 48A (Directive Principles):** Directs the State to protect and improve the natural environment, serving as the constitutional rationale for financing comprehensive Himalayan ecological monitoring programs.
- **National Action Plan on Climate Change (NAPCC):** Houses the *National Mission for Sustaining the Himalayan Ecosystem (NMSHE)*, a dedicated institutional mechanism designed to assess ice-cover retreat, map glacial vulnerabilities, and secure sustainable development patterns across hill states.

Conclusion

The expansion of glacial lakes in Arunachal Pradesh underscores the volatile impacts of global warming on the fragile Himalayan cryosphere. Addressing the looming threat of GLOFs requires moving beyond historical retrospective analysis toward continuous satellite tracking, engineering stable moraine siphons, and establishing real-time warning stations.

UPSC Relevance

- **GS Paper III (Environment & Disaster Management):** Mechanics of Glacial Lake Outburst Floods (GLOFs), climate change impacts on alpine ecosystems, disaster mitigation architecture, and the institutional mandates of the NDMA.
- **GS Paper I (Physical Geography):** Himalayan geomorphology, cryosphere degradation, and glacial landforms under the influence of anthropogenic warming.