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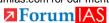
Mains Marathon

3rd Week July, 2025

HISTORY
ECONOMICS
POLITY
SCIENCE AND TECHNOLOGY
GEOGRAPHY AND ENVIRONMENT

INDEX

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India must rethink its one-front war concept amidst the China-Pakistan nexus. Analyze how nuanced strategic formulations can enhance national security preparedness and address complex geopolitical realities.

Introduction:
India's evolving security environment, marked by the deepening China-Pakistan nexus, demands a departure from outdated one-front war doctrines towards a multidimensional, proactive, and integrated national security strategy.
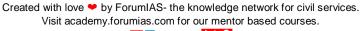
Why India's One-Front War Doctrine is Obsolete

1. **Two Nuclear-Armed Neighbours:** India shares contested borders with China and Pakistan, both possessing nuclear capabilities and strategic convergence against India's rise.
2. **Recent Conflicts:** Galwan Clash (2020): First fatalities at the India-China LAC in 45 years. Balakot Air Strike (2019): Signaled a shift in India's response posture towards Pakistan-sponsored terrorism. These highlight simultaneous threats across fronts.
3. **China-Pakistan Strategic Convergence: Military Collaboration as** China supplies 70% of Pakistan's military equipment (SIPRI, 2023). **CPEC and Gwadar Port where** China's $60 billion investment in CPEC not only violates India's sovereignty but also grants it strategic depth into the Indian Ocean. **Joint Military Exercises** like "Warrior" and "Shaheen" signify interoperability and coordinated operational training.

Nuanced Strategic Formulations for Multi-Front Preparedness

1. **Integrated Theatre Commands (ITCs):** Enhances jointness across Army, Navy, and Air Force. Allows real-time coordination for dual-front contingencies. Example: The proposed Maritime Theatre Command will streamline naval operations vis-à-vis Chinese presence in the IOR.
2. **Hybrid and Grey-Zone Warfare Readiness:** Both adversaries exploit information warfare, cyber intrusions, and irregular proxy elements (e.g., Pak-backed terror groups, Chinese psy-ops). India must enhance counter-influence capabilities and civil-military fusion in intelligence and surveillance.
3. **Force Modernization and Logistics:** Need for rapid induction of high-altitude warfare gear, UAVs, and indigenous platforms (e.g., LCA Tejas, K-9 Vajra, Pralay missile). BRO's infrastructure push: 295 projects worth ₹11,000 crore completed in border areas in past 3 years.
4. **Diplomatic Balancing and Strategic Partnerships: QUAD, I2U2, and Indo-Pacific:** India must leverage multilateral platforms to counter Chinese encirclement (String of Pearls). **India-Russia-Israel collaboration** in defence technology has improved precision and deterrence capacity.
5. **Internal Stabilization as Strategic Imperative:** Managing insurgency in Kashmir and Northeast, ensuring communal harmony, and strengthening democracy enhances internal security against external exploitation. Example: Revocation of Article 370 and development focus in J&K aims to neutralize Pakistan's psychological warfare.
6. **Revisiting Nuclear Doctrine:** India's "No First Use" policy may need recalibration to maintain credible deterrence in an unpredictable dual-front scenario.

Way Forward

1. **Doctrine of Strategic Flexibility:** Must allow for dynamic assessment of threat levels and deploy forces accordingly.
2. **Public and Private Sector Synergy:** In defence manufacturing, cyber defence, and AI-powered surveillance.

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3. **Intelligence and Cyber Infrastructure:** Integrated with platforms like NATGRID, NCW (Network-Centric Warfare), and Artificial Intelligence-enabled threat analysis.

Conclusion:

India's security paradigm must evolve beyond outdated assumptions. Embracing multi-domain, multi-front strategic thinking ensures resilience, deters aggression, and upholds national sovereignty in an increasingly complex geopolitical matrix.

Growing sexual violence in workplaces and educational institutions, once safe havens, is alarming. Analyze its multifaceted impact on women's economic participation, human capital development, and internal security, suggesting mitigation strategies.

Introduction

The surge in sexual violence within institutions erodes safe spaces, deters female empowerment, and weakens national development. It demands urgent structural, legal, and behavioural reform to restore institutional trust and justice.

Magnitude and Nature of the Crisis

1. **Rising Incidence in Institutional Spaces:** A 20-year-old B.Ed student in Odisha immolated herself after repeated complaints of sexual harassment by a senior teacher were ignored. A law college student was gang-raped on campus in Bengal (2024); similar cases in Mangaluru and Delhi expose systemic institutional failures. NCRB 2022 data: 4.45 lakh cases of crimes against women; 7.1% were rape, and 18.7% were assaults to outrage modesty—an increase of 4% from 2021.

2. **Failure of Institutional Redressal Mechanisms:** Internal Complaints Committees (ICCs), mandated under the Sexual Harassment of Women at Workplace Act, 2013, are either absent or non-functional in many institutions. Odisha government ordered immediate ICC formation only after the student's death, highlighting reactive rather than preventive governance.

Multifaceted Impacts of Sexual Violence in Institutional Spaces

1. **Reduced Economic Participation of Women:** Fear of harassment discourages women from entering or continuing in formal employment. ILO Report (2023): Only 28% of Indian women above age 15 participate in the labour force, a number significantly affected by perceived workplace safety. Loss of productivity, absenteeism, and attrition due to toxic work environments negatively impact GDP growth.

2. **Hindrance to Human Capital Formation:** Harassment in educational institutions results in dropout rates, mental trauma, and underachievement. ASER Report: Girls from rural and conservative families are often withdrawn from schools due to safety concerns. Undermines India's demographic dividend by reducing skilled and educated women in the workforce.

3. **Internal Security and Law-and-Order Challenges:** Rising crimes lead to public outrage, breakdown of trust in governance, and social unrest (e.g., 2012 Nirbhaya protests, 2021 Hathras case). Unchecked sexual violence contributes to normalization of gender-based crimes and impunity. It threatens the integrity of the state's role as protector, allowing potential for radicalization and vigilantism.

Mitigation Strategies for Systemic Reform

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1. **Institutional Compliance and Monitoring:** Ensure mandatory and audited formation of ICCs in all workplaces and campuses, with periodic reviews by UGC/State Commissions. Implement UGC's 2016 regulations on prevention of sexual harassment strictly across all higher education institutions.
2. **Legal and Judicial Reforms:** Fast-track courts for institutional crimes and campus-based sexual violence. Strengthen witness protection, and prohibit transfers or victim-blaming mechanisms during inquiry proceedings.
3. **Capacity Building and Sensitization:** Conduct gender-sensitivity training for staff, students, and employees. National Education Policy 2020 must incorporate gender ethics and consent education from school level.
4. **Technological Interventions:** Create grievance redressal portals with anonymity options. Install CCTV, panic buttons, and AI-based monitoring tools in campuses and offices.
5. **Community and Stakeholder Engagement:** Engage civil society, alumni networks, and local bodies in audits and safety awareness campaigns. Encourage student unions and HR departments to play proactive roles in prevention and reporting.

Conclusion

Ending sexual violence in institutions is essential for inclusive development, national security, and justice. Empowered, safe women are central to India's economic, social, and moral advancement.
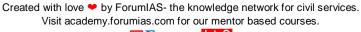
Linguistic debates often distract from critical governance failures like failing urban infrastructure. Examine how such misplaced priorities impact social cohesion and hinder equitable development and public service delivery.

Introduction:
While language forms a key pillar of identity, excessive politicization of linguistic issues often diverts attention from structural governance failures, especially in urban infrastructure, affecting inclusivity, development, and public welfare.

Impact of Linguistic Distractions on Governance and Development

1. **Diverts Focus from Urban Infrastructure Failures:** Bengaluru's flooding during monsoons, despite being India's tech capital, shows chronic civic mismanagement—yet debates rage over Kannada versus Hindi. Mumbai's garbage-laden streets and clogged drains go unattended while political discourse centers around Marathi linguistic pride and outsider resentment.
2. **Weakens Accountability in Public Institutions:** Leaders exploit emotive linguistic sentiments to avoid scrutiny over governance. For instance, violent protests over "outsider" languages often coincide with periods of civic crisis, shielding municipal inefficiency from public outrage. Media bandwidth is consumed by viral videos of linguistic altercations, crowding out reportage on failing sanitation or urban planning lapses.
3. **Undermines Urban Planning and Service Delivery:** Civic issues like solid waste management, drainage, housing, and traffic management need collaborative, inclusive governance—not polarizing debates. According to the NITI Aayog (2021), over 35% of India's urban population lives in informal housing with inadequate infrastructure. Yet, linguistic politics gets more legislative attention than slum upgradation or climate adaptation.
4. **Erodes Social Cohesion in Diverse Urban Spaces:** Indian cities are multicultural hubs, held together by mutual coexistence. Hate speech or violence over language—such as MNS attacks on non-Marathi

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speakers in Mumbai—breeds fear, mistrust, and regional xenophobia. Migrants feel alienated from the cities they help build, weakening community resilience.

5. **Limits Economic Mobility and Integration:** Imposing regional languages on migrant workers— drivers, house helps, laborers—adds burden rather than enabling skilling and upward mobility. In cities like Bengaluru and Chennai, many migrants struggle with local language demands, despite contributing significantly to the local economy. The NSSO (2022) notes that 93% of India's workforce is informal, and linguistic policing reduces their access to state services and legal protection.

6. **Dilutes Policy Discourse and Civic Participation:** Language wars take precedence over meaningful debates on water scarcity, housing, air pollution, and public health. Delhi's 2023 waterlogging crisis and Bengaluru's pothole deaths barely sustained news cycles, overshadowed by rhetoric around "Hindi imposition" or defending "local culture".

7. **Promotes Identity Politics over Inclusive Federalism:** Constitutionally, India celebrates linguistic plurality. Yet, state-level chauvinism undermines national integration and federal cooperation. States prioritizing local language enforcement often underperform in inter-state collaboration on infrastructure or disaster management, seen in flood responses or urban transport policies.

8. **Skews Resource Allocation and Public Investment:** Time and resources are spent legislating language mandates rather than upgrading sewage systems, solid waste infrastructure, or school facilities. For example, Karnataka's language quotas in private jobs overshadow its lag in health infrastructure in peri-urban regions, per NFHS-5.

Way Forward

1. **Reorient Political Discourse to Core Urban Issues:** Focus political and media attention on infrastructure, healthcare, and service delivery, not identity posturing.
2. **Promote Multilingual Inclusivity:** Encourage language learning as a bridge, not a barrier. Make public services linguistically accessible without coercion.
3. **Empower Urban Local Bodies (ULBs):** Strengthen municipal capacity, fiscal autonomy, and citizen participation in urban governance.
4. **Civic Education and Media Responsibility:** Shift media narratives toward civic duties, infrastructure health, and sustainable development goals (SDGs).

Conclusion

Linguistic debates, when weaponized, erode civic unity and mask urgent governance failures. Reclaiming the discourse for equitable development and inclusive urban planning is essential for a functional, resilient India.
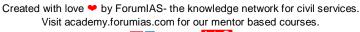
Amidst NATO threats on business with Russia, India emphasizes its national interests. Analyze how India navigates complex geopolitics, maintaining strategic autonomy while securing its energy needs and foreign policy objectives.
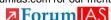
Introduction

India's foreign policy is guided by strategic autonomy, aimed at balancing great power interests while securing national imperatives such as energy security, defence, and economic stability.

India's Energy Diplomacy: Balancing Realism with Autonomy

1. **Prioritizing Affordable Energy Access**: India, the third-largest energy consumer globally, relies on crude imports for over 85% of its oil needs. After the Ukraine war, India capitalized on discounted

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Russian crude—Russian oil constituted 35% of India's total imports in 2023–24, up from 2% pre-war—ensuring fuel price stability and macroeconomic resilience.

2. **MEA's Firm Rebuttal Reflects Policy Sovereignty**: In response to NATO Secretary General's warning of secondary sanctions, India's Ministry of External Affairs (MEA) emphasized energy needs and decried Western double standards. India highlighted that European nations, while sanctioning Russia, simultaneously increased their own LNG and refined product imports from alternate channels, including India.

3. **Refined Fuels Loophole and Economic Gains**: A Centre for Research on Energy and Clean Air (CREA) report revealed that by late 2024, India had become the EU's largest exporter of refined petroleum, much of it processed from Russian crude. Thus, India turned a geopolitical fault line into an economic advantage, while indirectly aiding Western energy demands without breaching international law.

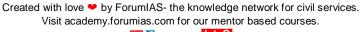**Maintaining Strategic Autonomy Amidst Global Polarization**

1. **Non-Aligned Yet Engaged: Independent Foreign Policy**: India's refusal to join Western sanctions on Russia, abstaining in UN votes, and engaging both Russia and the West exemplify its Nehruvian non-alignment reimagined. India engages in QUAD with the US, Japan, and Australia, yet simultaneously upholds robust defence and energy ties with Russia, a longstanding partner.

2. **S-400 Missile Deal and Defence Sovereignty**: The S-400 Triumf deal, signed with Russia despite threats under the US CAATSA law, demonstrated India's commitment to diversified defence sourcing. During "Operation Sindoor," the S-400 played a crucial role in India's layered air defence, proving the operational value of strategic diversification.

3. **Expanding the Energy Basket to Preempt Sanction Risks**: Petroleum Minister Hardeep Singh Puri noted India's diversification strategy—sourcing crude from over 30 countries including the US, Iraq, UAE, and Nigeria—preparing India against any unilateral sanctions. The Indian Oil Corporation and other PSUs have also inked long-term contracts with Latin American and African nations.

India as a Voice of the Global South

1. **Championing Multipolarity at Global Forums**: At BRICS, SCO, and G20, India advocates for equitable energy transitions and non-politicized trade. India's G20 Presidency emphasized inclusive global governance and defended the right of sovereign nations to pursue development without coercive restrictions.

2. **Diplomatic Engagements to Balance Geostrategic Pressures**: India has intensified bilateral dialogues with EU, US, and Russia, ensuring channels of communication remain open even in contentious times. Its "Strategic Autonomy 2.0" approach ensures that India is not seen as aligned or non-aligned, but self-aligned.

Conclusion

India's geopolitical posture reflects pragmatic realism—upholding sovereign interests while navigating global power rivalries. Strategic autonomy, energy pragmatism, and diplomatic maturity define India's balanced approach to an increasingly polarized world.

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Improving crop and human nutrition demands a paradigm shift, recognizing soil health as a public health imperative. Analyze the multi-sectoral governance and policy reforms needed for India's comprehensive food and nutritional security.

Introduction

India's nutritional challenge has evolved beyond food availability to the quality of food consumed. Addressing soil health as a foundational pillar of public health is now essential to ensure food that nourishes, not just fills.

Recognizing Soil Health as a Public Health Concern: Poor soil health leads to micronutrient-deficient crops, contributing to hidden hunger. Soil organic carbon (SOC), crucial for nutrient retention, is deficient in 80% of Indian soils (SHC data 2024). Example: Zinc-deficient soils result in low-zinc cereals, exacerbating stunting—affecting 35.5% of Indian children under 5 (NFHS-5).

Reforming Fertilizer Policy and Nutrient Management

1. Imbalanced NPK use (excess nitrogen, deficient phosphorus and potassium) worsens productivity and pollutes ecosystems.
2. Punjab: +61% nitrogen use, -89% potassium (2024 data).
3. Solution: Shift from blanket subsidies to targeted nutrient subsidies based on SHC recommendations.
4. Promote alternate fertilizers like nano-urea, liquid biofertilizers, and slow-release variants.

Soil Health Card (SHC) 2.0: Precision, Coverage, and Digital Integration

1. While SHC has tested 8.8 million samples, it needs: GIS mapping of deficient areas, AI-powered decision tools for farmers, Integration with Krishi Vigyan Kendras (KVKs) and PM-KISAN platforms.
2. Real-time soil advisory on mobile apps can democratize scientific nutrient use.
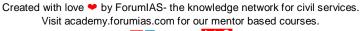
Convergence of Agricultural and Nutrition Missions

1. Merge goals of Poshan Abhiyaan, National Nutrition Mission, and PM-AASHA with National Mission on Sustainable Agriculture.
2. Encourage cultivation of biofortified varieties (e.g., zinc-rich wheat, iron-rich pearl millet under ICAR).
3. Food policy must shift focus from calories to nutrients. Example: PMGKAY and PDS could include biofortified millets, pulses, and coarse grains, not just rice/wheat.

Integrated Water-Soil-Nutrient Governance

1. Excessive irrigation in rice-wheat belts leads to nutrient leaching and groundwater nitrate contamination.
2. Link Atal Bhujal Yojana with nutrient mapping.
3. Encourage micro-irrigation and fertigation techniques (e.g., drip+liquid nutrients in horticulture).

Institutional Mechanisms for Multi-sectoral Coordination

1. Create an Inter-ministerial Soil and Nutrition Security Council involving MoA, MoHFW, MoRD, and MoEFCC.
2. Role: Coordinate investments, harmonise fertiliser-environment-nutrition policies, and monitor nutrient-sensitive agriculture.

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3. Public-private partnerships (e.g., ICRIER-OCP Nutricrops collaboration) must be incentivised through CSR and SDG-aligned frameworks.

Behavior Change and Farmer Education

1. Massive IEC campaigns are required through Doordarshan Krishi, KVKs, FPOs, and SHGs to promote balanced fertiliser use.
2. Community-led soil stewardship campaigns (like Swachh Bharat for soils) could transform rural practices.

Conclusion

Restoring soil health is central to both agricultural productivity and national nutrition outcomes. Only through integrated governance, precision inputs, and public awareness can India ensure true food and nutritional security.

An SC ruling allowing covert evidence in matrimonial disputes raises privacy concerns. Analyze its implications for the Right to Privacy, judicial principles, and ensuring gender justice in sensitive marital issues like marital rape.

Introduction
The Supreme Court's ruling permitting covert recordings as evidence in matrimonial disputes reshapes the boundaries of privacy, evidentiary norms, and gender justice—especially in sensitive cases like marital rape.
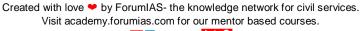
Judicial Recognition of Covert Evidence

1. In ABC v. XYZ (2024), the SC upheld admissibility of secretly recorded conversations between spouses, overturning the Punjab & Haryana HC's 2021 verdict.
2. The Court ruled that such recordings are not barred under spousal privilege (Section 122, Indian Evidence Act), particularly in disputes between spouses.
3. Rationale: Right to a fair trial includes the ability to present relevant evidence, even if covertly obtained.

Right to Privacy: A Conflicted Interpretation

1. In K.S. Puttaswamy v. Union of India (2017), the SC recognized privacy as a fundamental right under Article 21.
2. However, the current judgment holds that the right to privacy does not apply between spouses, claiming it is enforceable only against the state.
3. This vertical vs horizontal application distinction contradicts evolving jurisprudence that recognizes privacy even in intimate private spheres.

Implications for Marital Rape Discourse

1. Marital rape is not criminalized in India (Exception 2 to Section 375 IPC), despite growing national and international advocacy.

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2. A key challenge in prosecuting marital rape, if criminalized, is **proving consent** or lack thereof—here, covert evidence could become critical.

3. However, such recordings could both empower victims and also risk misuse in deeply unequal relationships.

Gendered Digital Divide and Technology Access

1. According to the GSMA Mobile Gender Gap Report 2023, only 67% of Indian women own a mobile phone vs 82% of men.

2. In rural areas, the gap is wider. Hence, covert evidence may disproportionately benefit digitally empowered spouses—often men—undermining fair adjudication.

3. Trial courts must assess not just admissibility, but context, voluntariness, and power asymmetry in collecting such evidence.

Balancing Evidentiary Fairness and Ethical Concerns

1. The Court likened a recording device to an eavesdropper—raising ethical and legal questions about consent and surveillance within marriage.

2. This opens Pandora's box: can spouses install CCTV, GPS trackers, spyware citing evidentiary need?

3. Without safeguards, such measures could become tools of control and coercion, especially in abusive marriages.

Needed Legal and Policy Safeguards

1. Codify **evidentiary thresholds** for covert material in matrimonial and criminal cases—akin to how sting operations are handled under media law.

2. Revise Indian Evidence Act to clarify boundaries of spousal privilege, privacy, and consent in the digital era.

3. Train family courts in technology-enabled justice delivery with gender sensitivity.

Conclusion

The SC's ruling expands evidentiary options but blurs privacy protections. Balancing judicial fairness with ethical safeguards and gender justice is imperative, especially as India debates criminalizing marital rape.
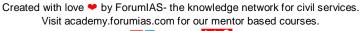
India's 'great power' status hinges on global multipolarity and West Asian stability. Examine how its diplomatic efforts urging U.S. tolerance towards Iran strengthen India's strategic autonomy and influence in evolving world order.

Introduction
India's rise as a great power is intrinsically linked to a multipolar world and a stable West Asia. Its diplomacy advocating U.S. restraint on Iran upholds both strategic autonomy and global balance.

Strategic Autonomy and Multipolarity: India's Core Foreign Policy Goals

1. India's pursuit of strategic autonomy—enshrined in its non-alignment legacy—has evolved into a proactive push for a **multipolar world order**, where no single power dominates.

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2. This vision was articulated by the External Affairs Minister who reaffirmed India's commitment to "building a multipolar world" during his 2024 Moscow visit.

3. Multipolarity provides India with manoeuvring space, safeguarding its sovereignty in decisions on trade, defense, and diplomacy.

Why West Asia Matters for India

1. West Asia is **vital to India's energy security**, diaspora welfare, and trade routes.

    2. India imports **nearly 55% of its oil needs** from the region (PIB, 2024).
    3. Iran, despite U.S. sanctions, has historically been a **strategic energy partner**, offering affordable crude and the development of **Chabahar Port**, crucial for connectivity to Central Asia and Afghanistan.
    4. A destabilized Iran or its regime collapse would consolidate U.S.-led unipolarity in West Asia, leaving India reliant on pro-U.S. regimes for energy, thereby constraining its bargaining power.

U.S.-Iran Tensions and India's Balancing Act

1. India has traditionally maintained balanced ties with both the **U.S. and Iran**, asserting its **strategic autonomy**.

    2. Despite U.S. pressure, India invested in **Chabahar Port** as an alternative to China-backed Gwadar.
    3. During earlier U.S. sanctions, India negotiated a **rupee-rial payment mechanism** to continue limited trade with Iran.
    4. India has also resisted Western demands to **isolate Russia** post-Ukraine, signaling its rejection of bloc politics.
    5. India must now extend this approach to encourage **U.S. tolerance towards Iran**, underlining the geopolitical costs of a destabilized West Asia.
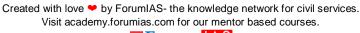
Preventing U.S.-Led Unipolarity: Global Implications

1. A U.S.-Israel-Iran war or Iran's balkanization would leave no fully sovereign, independent state in West Asia.

    2. India's influence in the region partly stems from its ability to engage with **both Gulf monarchies and alternative powers** like Iran and Syria.
    3. Loss of this balance would erode India's **strategic leverage** and bind its energy and diplomacy to Western interests.

4. Thus, India's advocacy for restraint not only supports peace but also **preserves multipolarity**, aligning it with like-minded powers like Russia and China while safeguarding its own ascent.

Quid Pro Quo and Realpolitik Diplomacy

India can leverage its position as a swing state in global geopolitics:

    1. The **U.S. needs India** in the Indo-Pacific as a **counterbalance to China**.
    2. India can highlight that West Asian conflict would raise global oil prices, **hurting India more than China**, thereby **weakening a natural U.S. partner**.

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3.   As seen in Ukraine, **India's non-aligned stance** influences global legitimacy of Western actions.

4.   India's diplomatic suasion, based on pragmatic realism, can nudge the U.S. towards **a more pluralistic view** of global order.

Conclusion

By advocating restraint on Iran and reinforcing multipolarity, India preserves its strategic autonomy, balances its regional interests, and strengthens its great power aspirations amid an evolving and contested global order.

India's National Sports Policy now embeds science and technology for athlete development. Evaluate how this evidence-based approach can transform sporting outcomes and foster holistic human resource development in the nation.

Introduction

The National Sports Policy 2025 marks a paradigm shift by embedding science, technology, and evidence-based medicine in athlete development, aiming to elevate performance, prevent injuries, and foster holistic national growth.
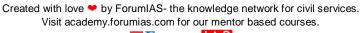
Scientific Approach in Athlete Development:

1.   **A Game Changer**: The traditional reliance on raw talent and passion in Indian sports has yielded limited global success. Recognizing this, the **National Sports Policy 2025** integrates **sports science, sports medicine, biomechanics, and data analytics** as foundational pillars. This evidence-based approach ensures that performance is sustained not just by physical effort, but by **scientific precision** and **medical resilience**.

2.   **Injury Surveillance and Prevention**: Injuries derail careers. The policy emphasizes early diagnosis, injury prevention, and structured rehabilitation — critical for athlete longevity. The **Return to Sports division** at Indira Gandhi Stadium is a major step in this direction.

3.   **Mental Health and Cognitive Training**: High-performance sport entails psychological pressures. Mental conditioning is now non-negotiable. By embedding **sports psychology** and **cognitive training**, the policy fosters mental fortitude, essential for consistent international success.
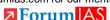
Infrastructure and Institutional Support

1.   The policy envisages upgrading sports science labs and medical units across the **Sports Authority of India (SAI) training centres** and **National Centres of Excellence (NCOEs)**. Bengaluru's SAI Centre and its recovery labs for **Target Olympic Podium Scheme (TOPS)** athletes are flagship examples.

2.   A **10-member medical panel** is now accompanying Indian athletes at international events (e.g., Paris Olympics 2024), ensuring **real-time injury and recovery management**.

3.   Collaboration with institutions like the **National Centre for Sports Science and Research** promotes interdisciplinary support from **physiotherapists, orthopaedic surgeons, psychologists, and data scientists**.

Technology and Innovation in Performance Monitoring

1.   Technology, especially **AI and data analytics**, is transforming athlete performance management.

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2. Real-time dashboards track **training loads, sleep cycles, hydration levels**, and predict injury risk.
3. Platforms like **Khelo India Portal** are being upgraded for transparency and timely intervention in athlete training cycles.

4.   Importantly, the policy fosters **sports innovation** through a dedicated **task force and research grants**, encouraging academic and R&D institutions to develop **India-specific tools** for performance and rehabilitation.

Impacts on Sporting Outcomes and Human Resource Development

1. India's **Tokyo 2020 Olympic medal haul (7 medals)** marked a turning point. With science-backed preparation, **Paris 2024** and **LA 2028** could yield better outcomes, reducing India's Olympic medal-to-population ratio, currently among the world's lowest.
2. **Holistic HRD**: Sports science drives job creation in allied fields — physiotherapy, nutrition, psychology, biomechanics, and sports tech. Example: **Sports analytics companies like SportsMechanics** now support federations with data-driven coaching.
3. Integration of science into sports helps promote **healthy lifestyle models** for youth, aligning with **National Education Policy 2020**, which advocates for sports as a core curricular component.

Remaining Gaps and Way Forward

1. **Access to elite facilities** is still uneven across rural and urban India.
2. Integration with **school and grassroots sports ecosystems**, especially through **Fit India Movement** and **Khelo India**, must be deepened.
3. **Continuous training of coaches and medical staff** is essential to adapt global best practices to Indian needs.

Conclusion

India's evidence-based National Sports Policy is a transformative blueprint that aligns passion with precision, enhancing athletic outcomes while nurturing a generation of healthier, skilled, and resilient human capital.
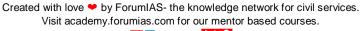
Removal of restrictions on thermal power plants aims to reform India's power sector. Examine how such policy changes can improve energy supply, benefit consumers, and ensure grid stability for economic growth.
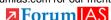
Introduction

India's recent policy revision on Flue Gas Desulphurisation (FGD) norms marks a pragmatic reform in the power sector, balancing environmental concerns, energy affordability, and grid stability to accelerate economic growth.

Easing of FGD Norms in Thermal Power Plants

1.   The 2015 MoEFCC notification had made installation of FGDs mandatory in all coal-based thermal power plants to curb sulphur dioxide (SO_2) emissions. However, Indian coal's naturally low sulphur content raised concerns over the scientific and economic necessity of such a blanket mandate.

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2.   In 2024, following extensive studies by IIT-Delhi and NEERI (commissioned by NITI Aayog and the Ministry of Power), the government issued a **revised directive** that classifies thermal plants into three categories: Near urban/critically polluted zones (FGD mandatory), Remote/less-polluted areas (FGD not required) and Intermediate zones (partial compliance based on local conditions).

3.   This scientific recalibration has exempted around **78% of plants** from FGD installation, thereby freeing up **significant capital resources** and avoiding an estimated **₹0.25–₹0.30/KWh** tariff hike for consumers.

Implications for Energy Supply and Grid Stability

1.   **Cost-Effective Power Generation:** The FGD relaxation avoids a cumulative capital expenditure of over ₹80,000 crore across thermal plants, which can now be diverted to modernizing old plants, improving plant load factor (PLF), and supporting **expansion in renewables**.

2.   **Grid Reliability during Transition:** As India accelerates its energy transition with a **renewables target of 500 GW by 2030**, thermal power remains crucial to ensure **baseload generation** and balance the intermittency of solar and wind energy. According to the CEA, **thermal plants still account for 72%** of India's total electricity generation.

3.   **Energy Security:** India's domestic coal is more secure and less geopolitically vulnerable than imported fuels. The move strengthens India's energy sovereignty, especially when global supply chains face uncertainty due to geopolitical tensions.

Consumer Welfare and Affordability

1.   **Avoiding Tariff Shock:** The FGD capex would have increased retail electricity tariffs, affecting households and industries alike. By avoiding this, the reform **protects poor and middle-class consumers** and ensures the **competitiveness of Indian manufacturing**, aligned with the *Atmanirbhar Bharat* mission.

2.   **Support for DISCOM Viability:** Most distribution companies are financially strained. Cost escalations from FGDs would have further worsened their viability. The reform thus indirectly contributes to **financial health of DISCOMs**, crucial for uninterrupted power supply.

Environmental Sustainability Balanced with Realism

1.   Although FGDs control SO_2 emissions, NEERI's study concluded that **ambient SO_2 levels are within safe limits**, even without FGDs, due to India's tropical atmospheric conditions (strong solar insolation, vertical convection).

2.   **FGDs themselves have a carbon footprint**, especially due to **limestone mining and water usage**.

3.   This points to a **life-cycle approach to emissions**, not just end-of-pipe solutions. The reform, therefore, **realigns emission norms** with *India-specific environmental realities* rather than borrowing Western benchmarks uncritically.

Strategic Alignment with Long-Term Goals

1.   The policy shift complements India's **National Electricity Plan (NEP) 2023**, which calls for 50% power capacity from non-fossil sources by 2030, without compromising energy access and economic productivity.

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2.   Furthermore, it aligns with SDG 7 (Affordable and Clean Energy) and SDG 9 (Industry, Innovation, and Infrastructure), by making power both green and accessible.

Conclusion

Revising FGD norms exemplifies India's pragmatic energy governance—balancing environmental needs with affordability, energy security, and economic growth. Such reforms will enable a resilient, inclusive, and sustainable power sector transformation.

A Presidential Reference seeks SC opinion on Bill assent timelines, potentially impacting prior rulings. Examine its constitutional implications for legislative process, separation of powers, and the evolution of judicial precedents.

Introduction

The recent Presidential Reference to the Supreme Court under Article 143, seeking clarity on timelines for gubernatorial assent to Bills, raises fundamental questions of constitutional governance, federalism, and judicial interpretation.

The April 8 Judgment and Its Aftermath

1.   In **April 2025**, the Supreme Court held that **prolonged inaction by Governors and the President** on State Bills is unconstitutional, imposing judicially enforceable timelines.

2.   The judgment stemmed from Tamil Nadu's challenge to Governor R.N. Ravi's delay in acting on ten Bills, later reserved for Presidential assent.

3.   This ruling was a constitutional landmark — the first to articulate **time-bound obligations** on constitutional heads under Articles 200 and 201, bolstering the **legislative autonomy of States**.

4.   Subsequently, President Droupadi Murmu invoked **Article 143** to refer **14 legal questions** to the Supreme Court, seeking clarification on whether courts can prescribe timeframes for the President and Governors. Critics argue this is a backdoor challenge to the April 8 ruling.

Presidential Reference and Its Legal Scope

1.   Under **Article 143(1)**, the President may seek the Court's advisory opinion on **questions of law or fact** that are of "public importance". This is a **non-binding opinion**, but commands high persuasive value. However, the **Supreme Court is not obligated** to respond — as seen in the **Ayodhya Reference (1993)** and **J&K Resettlement Bill (1982)** cases.

2.   Notably, in **In Re: Cauvery Water Disputes (1991)**, the Court held that Article 143 **cannot be used to revisit settled rulings**. The April 8 decision, given under adjudicatory jurisdiction, is binding under **Article 141**, and a Presidential Reference **cannot override** it.

Constitutional Implications

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1. **Legislative Process and Federalism:** The Reference touches the **core of legislative federalism**. Delays by Governors in granting assent disrupt the will of democratically elected State legislatures. The April 8 ruling reaffirmed the **Westminster principle** that Governors act on the aid and advice of the State Cabinet. If the Court dilutes this by favouring wide discretionary leeway, it could **entrench executive centralism**, damaging **cooperative federalism** — a principle upheld in **S.R. Bommai v. Union of India (1994)** and **Rameshwar Prasad v. Union of India (2006)**.

2. **Separation of Powers:** The Reference raises questions about **judicial encroachment into executive discretion**. However, the judiciary has consistently interpreted inaction or mala fide delay by constitutional authorities as **justiciable**. In **Maneka Gandhi v. Union of India (1978)**, procedural arbitrariness was struck down as unconstitutional. Likewise, the April 8 ruling promotes **accountability**, not interference.

3. **Judicial Precedent and Advisory Jurisdiction:** While advisory opinions are not binding, they have influenced jurisprudence. In **R.K. Garg (1981)**, the Court treated its earlier advisory opinion on the **Special Courts Bill (1978)** as binding. Thus, even if the April 8 verdict stands, a new opinion could **refine or nuance** the law. The 1998 **Presidential Reference on judicial appointments** led the Court to **revise the Collegium system** without overturning the 1993 ruling — a precedent suggesting that **evolution of precedent via advisory input** is possible.

Way Forward

1. The **Court must preserve the April 8 ruling's core** — safeguarding legislative autonomy and holding constitutional authorities accountable.
2. A **balanced clarification**, ensuring that timelines are binding but reasonable, can uphold both **federal values and institutional dignity**.
3. The advisory opinion must **not substitute judicial review**, which remains the only constitutional means to challenge settled law.

Conclusion

The Presidential Reference offers an opportunity to clarify constitutional duties without reversing settled law. It must reinforce federalism, uphold separation of powers, and preserve judicial independence in India's democratic framework.
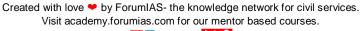
Despite chaotic appearances, effective urban waste management is achievable, as per Swachh Survekshan. Examine the governance reforms and policy interventions crucial for ensuring sustainable sanitation and livable Indian cities.
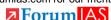
Introduction

Swachh Survekshan 2024-25 reveals that sustainable urban sanitation is achievable through robust policy, civic participation, and innovation, despite challenges of scale, behaviour, and institutional inefficiency in Indian cities.

Swachh Survekshan: A Transformative Sanitation Audit

1. The ninth edition of **Swachh Survekshan**, under the Swachh Bharat Mission-Urban (SBM-U), covered over 4,500 cities, with 140 million citizens contributing feedback.

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2.   It has emerged not only as a cleanliness ranking tool but also a **driver of urban governance reform**.

3.   By grading cities across 10 comprehensive parameters—such as source segregation, scientific processing, sanitation worker welfare, and grievance redressal—it promotes **evidence-based, competitive federalism**.
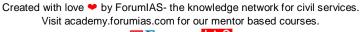
Governance Reforms Driving Cleanliness

1.   **Decentralised Accountability in Urban Local Bodies (ULBs):** With India generating over **1.5 lakh tonnes of solid waste daily**, waste governance must begin at the city ward level. Swachh Survekshan has prompted several ULBs to institutionalise segregation, collection, and processing mechanisms. Surat, for example, transformed from a garbage-prone city to one of India's cleanest through **automation, GIS-based bin mapping**, and robust monitoring systems.

2.   **Population-Based Grading and League Formation:** The 2025 survey introduced population stratification into five categories, offering fairer competition and benchmarking. Additionally, the **Super Swachh League** created room for cities like Lucknow and Ahmedabad to enter top ranks, avoiding the usual dominance of Indore and Navi Mumbai. This decentralised recognition has promoted **inclusivity in policy outcomes**.

3.   **Grievance Redressal and Citizen Feedback Mechanisms:** Digital platforms like SBM Urban and Swachhata App have improved citizen engagement. Participatory grievance systems and real-time tracking (e.g., GPS-enabled waste vehicles in Noida) have enhanced **transparency and responsiveness** in service delivery.

Innovation and Sustainable Practices

1.   **Circular Economy in Waste:** The survey's theme, **Reduce, Reuse, Recycle (RRR)**, aligns with global sustainable waste practices. Pune has leveraged cooperatives of ragpickers to institutionalise decentralised waste recovery. Agra's transformation of the toxic Kuberpur landfill into a green zone using **biomining and bioremediation** exemplifies innovation.

2.   **Waste-to-Wealth and Waste-to-Energy (WtE):** India currently has around **15 WtE plants**, but concerns about commercial viability remain. SBM-U's 'Waste to Wealth' vision necessitates policy incentives for private investors. Cities like Surat, which generate revenue from **sewage-treated water**, demonstrate that monetising waste is possible.

3.   **Tourism-Linked Sanitation:** Cities with high footfall like Prayagraj and Varanasi have shown that clean infrastructure boosts pilgrimage and tourism. India receives **less than 1.5% of global tourist arrivals**—an issue sanitation reform can help address.

Challenges and Way Forward

1. **Behavioural Change**: Despite SBM's success in eliminating open defecation, cultural shifts around **waste reduction and responsible consumption** remain limited.
2. **Plastic and E-Waste Management**: Only **60% of plastic waste is recycled** in India, and e-waste volumes are rising. Extended Producer Responsibility (EPR) and robust enforcement are essential.
3. **ULB Capacity and Financing**: ULBs often lack staff and financial capacity. Tools like **Performance-Based Grants** under the 15th Finance Commission must be fully leveraged.

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Conclusion

Swachh Survekshan shows that clean cities are attainable through innovation, decentralised governance, and citizen participation. Scaling such models will ensure sustainable sanitation and urban livability in India's rapidly urbanising future.

The changing dimensions of warfare extend beyond weaponry to tactics. Examine how India can adapt its defense strategy and preparedness to effectively counter evolving threats in this new reality.

Introduction

Modern warfare is increasingly multi-domain, automated, and technology-driven, making traditional force-centric strategies inadequate. India must recalibrate its defense preparedness to remain agile, resilient, and capable in a rapidly evolving global threat landscape.

Evolving Nature of Warfare: From Kinetics to Complexity

1. Warfare has transformed from physical combat and state-on-state conventional war to multi-domain, hybrid, and network-centric operations.

2. Conflicts such as **Russia-Ukraine**, **Israel-Hamas**, and **the May 2025 India-Pakistan skirmish** showcase: **Drones and loitering munitions** replacing manned reconnaissance, use of **AI and image-recognition algorithms** to autonomously identify and strike targets, widespread **cyberattacks** targeting critical infrastructure.

3. Deployment of **hypersonic weapons** (e.g., Russia's Kinzhal missile, China's DF-ZF) and **long-range UAVs** like the U.S. MQ-9 Reaper.

4. Warfare today demands **speed, precision, and multi-domain coordination**, including land, air, sea, space, and cyberspace — far beyond conventional physical force projection.

Strategic Challenges for India

1. **Technological Backwardness and Delayed Indigenisation:** While India has acquired **Rafale jets**, **S-400s**, and **BrahMos missiles**, its indigenous efforts — such as the **Tejas Mk-2**, **AMCA**, and **Ghatak UCAV** — lag behind China's J-20 and its upcoming sixth-generation fighters. China already operates robust ISR (Intelligence, Surveillance, Reconnaissance) drone networks and has invested heavily in **autonomous swarming systems**.

2. **Two-Front War and Grey-Zone Threats:** India faces a **two-front threat** from China and Pakistan, compounded by **proxy actors** and hybrid tactics. Cyber-intrusions targeting Indian infrastructure (e.g., 2020 Mumbai power grid attack), and disinformation campaigns highlight non-kinetic vulnerabilities.

3. **Dependence on Imported Technology:** India remains the **world's largest arms importer** (SIPRI 2024), increasing strategic vulnerability during protracted conflicts. Critical delays in platforms like **high-altitude UAVs**, **hypersonics**, and **satellite resilience** amplify this concern.

Adapting India's Defence Strategy

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1.   **Modernisation of Doctrines and Forces: Integrated Theatre Commands (ITCs)** must focus on **inter-service synergy**, essential for rapid deployment and multi-domain coordination. Doctrines need to prioritise **network-centric warfare**, **rapid response**, and **electronic dominance**.

2.   **Focus on Emerging Technologies: AI-based threat detection**, **quantum communication**, **blockchain for logistics**, and **swarm drone technologies** must be integrated into R&D. DRDO and startups under **Innovations for Defence Excellence (iDEX)** should be incentivised for quick deployment, not just experimentation.

3.   **Cyber and Space Command:** Elevate **Defence Cyber Agency** and **Defence Space Agency** into fully operational tri-service commands. Cyber-warfare drills, offensive cyber capabilities, and satellite resilience must be prioritised.

4.   **Indigenous Manufacturing and Strategic Autonomy:** Boost **defence self-reliance** through Production-Linked Incentives (PLIs), strategic partnerships, and the **Make in India** initiative. Enhance **public-private joint R&D ecosystems** in key areas like stealth, AI, and autonomous systems.

5.   **Human Capital and Tactical Reorientation:** Revamp military training to focus on **AI warfare, drone tactics, cyber warfare**, and **multi-domain operations**. Encourage **tactical decentralisation** and **real-time decision-making** through smart command systems.

Case Examples of Success

1. **Operation Sindoor (2025)** showcased India's use of **loitering munitions, fixed-wing drones**, and **BrahMos** for precision targeting.
2. Cities like Surat have integrated **biomining AI systems** for resilience, reflecting India's readiness to merge technology with policy.

Conclusion

India must evolve beyond traditional militarism to a future-ready defense posture rooted in agility, innovation, and indigenisation to effectively counter rising multidimensional threats in a technologically fluid global environment.

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