



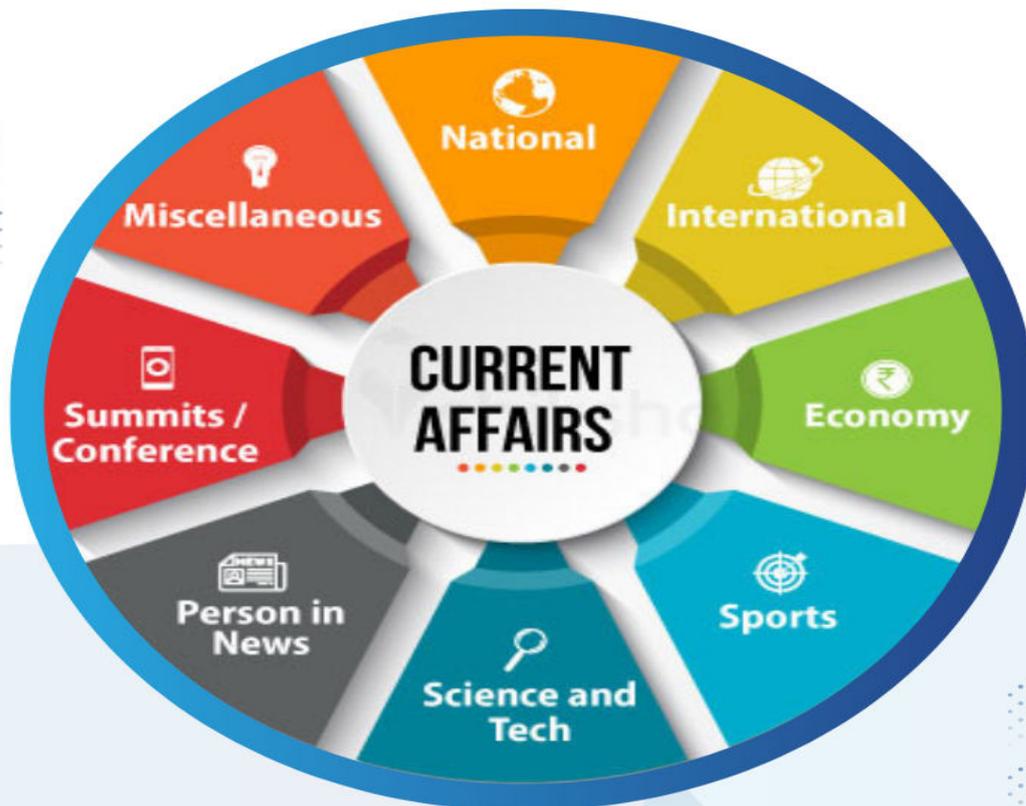
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VIDHVATH IAS KAS ACADEMY
&
STUDY CENTRE

DAILY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

DATE: 09/12/2025 (TUESDAY)



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1. 2nd WHO Global Summit on Traditional Medicine: Key Highlights

- **Co-Hosting and Venue:** The summit will be co-hosted by the **Ministry of Ayush** and the **World Health Organization (WHO)** in **New Delhi (Bharat Mandapam)** from December 17–19, 2025. This marks the second edition, following the first successful summit in Gujarat in 2023.
- **Theme and Objective:** The theme is "**Restoring balance: The science and practice of health and well-being.**" The primary goal is to drive the **evidence-based, equitable, and sustainable integration** of Traditional, Complementary, Integrative, and Indigenous Medicines into national health systems globally.
- **Focus Areas:** Key deliberations will concentrate on **scientific validation** (research, clinical trials, regulatory frameworks), **digital health** (AI-driven pharmacopeias, digital repositories), **biodiversity protection** (sustainable sourcing), and **global collaboration**.
- **India's Leadership & Global Trust:** The hosting of the summit and the establishment of the **WHO Global Traditional Medicine Centre (WHO-GTMC)** in **Jamnagar, Gujarat**, underscore India's **global leadership** and growing international confidence in its traditional knowledge systems (Ayurveda, Yoga, Unani, Siddha, Sowa-Rigpa, Homoeopathy - AYUSH).
- **Key Side Event:** A dedicated side event titled "**Ashwagandha: From Traditional Wisdom to Global Impact**" will focus on deepening the scientific understanding of this renowned Indian medicinal plant, highlighting its adaptogenic, neuroprotective, and immunomodulatory properties, with an emphasis on safety and quality.
- **Global Roadmap:** The Summit is expected to shape a **decade-long roadmap** for traditional medicine, aligning with the **WHO Global Traditional Medicine Strategy 2025–2034**, and fostering a more holistic, inclusive, and sustainable future for healthcare in line with India's vision of "*Sarve Bhavantu Sukhinah, Sarve Santu Niramayah*" (May all be happy, May all be free from illness).



Constitutional & Legal Provisions (India)

- **Constitutional Mandate (DPSP):** **Article 47** of the Indian Constitution, a Directive Principle of State Policy (DPSP), states that the State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties. This is interpreted to include promoting all effective systems of medicine, including traditional ones.
- **Key Legal Acts:**
 - **The Indian Medicine Central Council Act, 1970** (Repealed by NCISM Act, 2020): Provided for the constitution of the Central Council of Indian Medicine for the maintenance of a Central Register of Indian Medicine and for matters connected therewith.
 - **The National Commission for Indian System of Medicine (NCISM) Act, 2020:** Replaced the IMCC Act, 1970, to formalize and regulate education and practice of the Indian systems of medicine, ensuring quality standards.
 - **The Drugs and Cosmetics Act, 1940:** Regulates the manufacture and sale of Ayurvedic, Siddha, Unani drugs (Chapter IVA and Schedule T govern AYUSH product quality and Good Manufacturing Practices - GMP).



- **Definition: Traditional Medicine** is defined by WHO as the total sum of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness. **AYUSH** is the acronym for India's indigenous systems of health: Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa-Rigpa, and Homoeopathy.

UPSC Relevance

The 2nd WHO Global Summit on Traditional Medicine is highly relevant for the UPSC Civil Services Exam across multiple papers:

- **GS II (Governance, Health, & International Relations):** Covers the integration of traditional medicine into national health systems (Universal Health Coverage), government policies and interventions (Ministry of Ayush, National AYUSH Mission), and India's role in global health diplomacy and soft power.
- **GS III (Biodiversity & Science and Technology):** Relates to biodiversity conservation (medicinal plants, sustainable sourcing), intellectual property rights (Traditional Knowledge Digital Library - TKDL is a related concept), and the application of science/technology (digital health, AI) for the scientific validation of traditional knowledge.
- **GS I (Culture):** Traditional medicine systems like Ayurveda, Yoga, and Siddha are an integral part of India's cultural heritage and knowledge systems, directly relevant to the 'Indian Culture' segment.

Conclusion

India's hosting of the 2nd WHO Global Summit on Traditional Medicine is a pivotal moment, leveraging the country's rich heritage in Ayush systems to lead the global movement toward holistic and integrative healthcare. By focusing on scientific evidence, regulatory frameworks, digital innovation, and biodiversity, the summit aims to mainstream traditional medicine, strengthening India's soft power and contributing significantly to the global attainment of Universal Health Coverage.

2. PM GatiShakti & Infrastructure Boost: Key Highlights

- **Network Planning Group (NPG) Role:** The **104th NPG meeting** was convened under the **PM GatiShakti National Master Plan (PMGS NMP)** to review key infrastructure proposals. The NPG's core function is to ensure projects conform to **PM GatiShakti principles**—specifically, integrated **multimodal infrastructure**, **last-mile connectivity** to economic/social nodes, and the **'Whole of Government' approach**.
- **Five Rail Projects Reviewed:** Five major rail infrastructure proposals were evaluated, including multi-tracking sections (3rd and 4th lines) on High Traffic Density routes like the **Howrah–Chennai main line** (Nidadavolu–Duvvada) and the **Golden Quadrilateral** (Nagda-Mathura section). These projects are crucial for fulfilling the **Mission 3000 MT** strategy in the National Rail Plan.
- **Focus on Logistics Efficiency:** The primary anticipated impact of these new rail lines and capacity augmentation is to significantly **boost logistics efficiency**, enhance **freight carrying capacity**





(handling cargo for fertilizers, coal, cement, containerized goods), and **reduce congestion** on existing high-density corridors.

- **Regional & Multimodal Connectivity:** Projects are geographically diverse, strengthening critical links in Andhra Pradesh, Tamil Nadu, Uttar Pradesh, Rajasthan, Madhya Pradesh, Goa, and Karnataka. The proposals emphasize alignment with existing strong **road and port connectivity** (e.g., Chennai Port, Visakhapatnam ports) to ensure seamless **multimodal freight movement** and provide last-mile connectivity to industrial and warehousing hubs.
- **Konkan Railway Financial Restructuring:** A significant non-capacity augmentation proposal was the **3rd Financial Restructuring** of the **Konkan Railway Corporation Limited (KRCL)**. This includes major infrastructure investments (new tunnels and crossing stations) to improve line capacity, safety, and operational efficiency along the crucial Konkan Railway route across Maharashtra, Goa, and Karnataka.
- **Socio-Economic Benefits:** Beyond logistics, the projects are projected to deliver substantial **socio-economic benefits** to their catchment areas by supporting regional industrial growth (steel plants, power plants), increasing trade movements, and improving passenger services, thereby supporting the vision of balanced regional development.

Definitions & Key Initiatives

- **PM GatiShakti National Master Plan (PMGS NMP):** A transformational approach for integrated planning and synchronized project implementation across all concerned Ministries/Departments to reduce logistics costs, improve efficiency, and break departmental silos.
- **Network Planning Group (NPG):** An inter-ministerial body within the PM GatiShakti framework, housed in the Department for Promotion of Industry and Internal Trade (DPIIT), responsible for unified planning and evaluation of infrastructure projects based on the principles of integrated planning and multimodal connectivity.
- **Mission 3000 MT:** A strategic objective under the **National Rail Plan** aimed at increasing the Indian Railways' freight loading capacity to 3,000 Million Tonnes Per Annum (MTPA) by 2030, necessitating capacity augmentation on High-Density Networks (HDN).

Constitutional & Legal Provisions

- **Seventh Schedule (Union List): Entry 22 (Railways)** places the subject of railways exclusively under the legislative domain of the Parliament (Union Government).
- **PM GatiShakti (Executive Mandate):** The PM GatiShakti NMP is an executive initiative under the overall responsibility of the Cabinet Secretariat, operationalized through the Ministry of Commerce and Industry and various infrastructure Ministries (Railways, Road Transport, etc.). It signifies an administrative reform to move away from sectoral planning to **comprehensive planning** and execution.
- **Ministry of Railways Acts:** The planning and execution of these projects are governed by various legal frameworks including **The Railways Act, 1989**, concerning the construction, maintenance, and operation of railways.

UPSC Relevance

The review of infrastructure proposals by the NPG under the PM GatiShakti framework is highly relevant for the UPSC Civil Services Exam:



- **GS II (Governance & Policy):** Directly covers the government's efforts in administrative reforms (Whole of Government approach), inter-ministerial coordination (NPG), and major economic policies aimed at improving governance and efficiency.
- **GS III (Economy & Infrastructure):** Central to the topic of **Infrastructure (Railways and Logistics)**, its role in economic development, reducing logistics costs (a key factor in industrial competitiveness), and achieving strategic targets like **Mission 3000 MT**. The focus on multimodal connectivity links to the overall logistics ecosystem.
- **Prelims:** Specific initiatives like **PM GatiShakti NMP**, the function of the **NPG**, the concept of **High-Density Networks (HDN)**, and major rail projects (e.g., Golden Quadrilateral sections) are factual questions frequently asked.

Conclusion

The NPG's evaluation of five critical rail projects marks significant progress in operationalizing the **PM GatiShakti National Master Plan**. By prioritizing capacity augmentation, multimodal integration, and financial strengthening of key operators like KRCL, these initiatives are set to be transformative drivers for boosting India's logistics efficiency, reducing transit times, and accelerating regional industrial growth, thereby contributing fundamentally to the nation's economic competitiveness and strategic vision for infrastructure development.

3. Gyan Bharatam Initiative: Safeguarding India's Manuscript Heritage

- **Flagship Initiative and Mandate:** **Gyan Bharatam** is the flagship initiative of the **Ministry of Culture (MoC)**, announced in the Union Budget 2025, dedicated to **surveying, documenting, conserving, digitizing, and disseminating India's manuscript heritage**. It aims to cover over **one crore manuscripts** through collaboration with academic institutions, museums, libraries, and private collectors.
- **National Digital Repository & Technology:** A key component is the establishment of a **National Digital Repository** supported by **advanced technology** and **Artificial Intelligence (AI)**. This ensures global accessibility, advanced searching, and the utilization of traditional knowledge in contemporary research, with **Rs. 491.66 crore sanctioned** for 2025-2031.
- **Operational Structure & Core Verticals:** The initiative is a **Pan-India** effort operationalized through a network of **Cluster and Independent Centres** (31 institutions initially). Its work is organized across five core verticals: **Survey & Cataloguing; Conservation & Capacity Building; Technology & Digitization; Linguistics & Translation; and Research, Publication & Outreach**.
- **The Delhi Declaration (Gyan Bharatam Sankalp Patra):** This declaration formalizes the national commitment to preserving manuscripts as the "**living memory of India's civilization**." It calls for modern conservation, large-scale digital access, renewed research, and transforming heritage preservation into a **people's movement**, positioning India as a global centre for manuscript-based learning.
- **Progress and Synergy:** The **Gyan Bharatam Digital Web Portal** has been launched, and approximately **3.5 lakh manuscripts** have already been digitized. The initiative works in synergy with other MoC autonomous organizations like the **Sangeet Natak Akademi** and **Eastern Zonal**





Cultural Centre (EZCC), which focus on promoting and preserving India's diverse performing arts, thus ensuring a holistic approach to cultural heritage.

Constitutional & Legal Provisions

- **Constitutional Mandate (DPSP): Article 49** of the Constitution (Directive Principles of State Policy - DPSP) mandates that the State shall be obliged to protect every monument or place or object of artistic or historic interest, declared by or under law made by Parliament to be of national importance, from spoliation, disfigurement, destruction, removal, disposal or export, as the case may be. Manuscripts, as objects of historic interest, fall under this protective umbrella.
- **Key Act: The Ancient Monuments and Archaeological Sites and Remains Act, 1958** (AMASR Act) and its subsequent amendments, which govern the protection of ancient monuments, archaeological sites, and **antiquities**. Manuscripts that meet the criteria of antiquity may be covered under this Act.
- **Intellectual Property and Rights:** While the knowledge contained in the manuscripts is ancient, the **digitalization and dissemination** efforts are linked to modern intellectual property regimes, potentially requiring regulation concerning access, usage rights, and prevention of unauthorized commercial exploitation.

Definitions & Key Concepts

- **Manuscript:** Literally, "hand-written." A book, document, or piece of music written by hand rather than typed or printed. India possesses one of the world's largest collections of manuscripts, spanning diverse languages, scripts, and subjects (e.g., medicine, mathematics, literature).
- **Digital Repository:** A managed collection of digital content. In this context, it is an advanced, centrally-managed electronic system for storing, preserving, and providing access to digitized copies of the manuscripts.
- **Gyan Bharatam Sankalp Patra (Delhi Declaration):** A formal resolution/commitment made by the government and stakeholders to guide the principles, scope, and execution of the Gyan Bharatam initiative.

UPSC Relevance

The Gyan Bharatam initiative is highly relevant for the UPSC Civil Services Exam across multiple papers:

- **GS I (Indian Heritage and Culture):** Directly addresses the preservation and transmission of India's vast cultural and knowledge heritage, linking to the themes of ancient texts, literature, and knowledge systems.
- **GS II (Governance & Policy):** Covers the government's role, policies, and initiatives (Ministry of Culture) in promoting culture and utilizing technology (AI, Digital India) for cultural preservation and national development.
- **GS III (Science and Technology):** Relevant to the application of technology (Digitization, AI, Web Portals) in heritage conservation and the creation of a massive digital public good.

Conclusion

Gyan Bharatam represents a monumental and technologically advanced national commitment to salvaging and revitalizing India's immense manuscript legacy. By employing a 'Whole of Nation' approach involving institutions, technology, and a dedicated financial outlay, the initiative is not just an act of conservation but a



- **The Citizenship Act, 1955:** The primary law governing the acquisition and determination of Indian citizenship (by birth, descent, registration, naturalisation, incorporation of territory). It vests the power of formal citizenship determination with the Central Government (MHA).
- **Foreigners Act, 1946:** The legal basis for the establishment of **Foreigners Tribunals (FTs)**—**quasi-judicial bodies** with powers similar to a Civil Court—to determine whether a person is a 'foreigner' or an illegal migrant. The burden of proving non-foreigner status is on the individual (Section 9 of the Act).

Definitions of Key Terms

- **Jus Soli (Right of the Soil):** A principle of nationality law by which citizenship is determined by the place of birth (territory).
- **Jus Sanguinis (Right of Blood):** A principle of nationality law by which citizenship is determined by the nationality of the parents/ancestors.
- **National Register of Citizens (NRC):** A register containing the names and relevant information of all genuine **Indian Citizens** as defined by the Citizenship Act, 1955.
- **National Population Register (NPR):** A register of all **usual residents** of the country, defined as a person who has resided in a local area for the past six months or intends to reside there for the next six months or more (includes both citizens and non-citizens).

UPSC Relevance

This topic is critical for the UPSC Civil Services Exam, directly linking to:

- **GS II (Polity and Governance):** Challenges to the separation of powers (ECI vs. MHA authority), the role of the ECI, Citizenship law (amendments and provisions), the structure and function of Quasi-Judicial bodies (Foreigners Tribunals), and issues of rights and identity.
- **GS I (Society/History):** Citizenship philosophy (Jus Soli vs. Jus Sanguinis) and the historical context of the Assam Accord (Section 6A).
- **Essay/Ethics:** The philosophical question of the "**paradox of democracy**"—where the state determines who constitutes the people—and the ethical implications of placing the **onus of proof** on vulnerable individuals.

Conclusion

The legal challenge against the ECI's Special Intensive Revision of electoral rolls has brought to the fore the deeply rooted complexities and ambiguities in India's citizenship governance. The conflict over jurisdictional authority, the lack of a single proof of citizenship, and the fundamental paradox of the administrative state determining the 'people' underscore a need for a clear, unified, and legally sound framework that balances national security imperatives with the constitutional rights and procedural fairness owed to every resident.

5. 23rd India-Russia Summit: Re-Engineering a Strategic Partnership

- **Geopolitical Balancing and Signaling:** The high-level 23rd Summit, marked by the Russian President's first visit to India since the Ukraine conflict, was a crucial **geopolitical signal**. It reaffirmed the "**Special and Privileged Strategic Partnership**" amidst the challenging backdrop of the Ukraine war, demonstrating India's commitment to an **independent foreign policy** and its confidence in balancing ties with its core partners (Russia and the West).



- **Economic Cooperation Roadmap (Programme 2030):** The Summit adopted the **Programme for the Development of Strategic Areas of India-Russia Economic Cooperation till 2030**. This roadmap aims to achieve a bilateral trade target of **\$100 billion by 2030** through diversification, elimination of non-tariff barriers, investments in non-energy sectors (fertilizers, pharmaceuticals, railways), and strengthening arrangements for bilateral settlements in **national currencies** (Rupee-Ruble).
- **Foundation Pillars: Energy and Defence:**
 - **Energy Security:** Cooperation in the energy sector is foundational, given India's massive import needs and Russia's vast resources. The focus is on assured and affordable supply of fossil fuels, critical minerals, and deepening collaboration in **Civil Nuclear** energy (e.g., Kudankulam) and emerging areas like **Small Modular Reactors (SMRs)**.
 - **Defence Ties:** The relationship is shifting from a buyer-seller dynamic to **joint production and technology transfer** under the 'Make in India' initiative, focusing on local production of spares, maintenance support, and cooperation in **niche technologies** (e.g., BrahMos, S-400 system maintenance).
- **New Strategic Connectors:** Three new growth areas are gaining prominence: **Maritime Connectivity** (via the **Chennai–Vladivostok Maritime Corridor** and the **Northern Sea Route (NSR)**), **Arctic Cooperation** (including training Indian seafarers for polar waters), and a newly finalized agreement on the **export of Indian skilled workers to Russia** to address Russian demographic challenges and create employment for Indians.
- **Stance on the Ukraine Conflict:** India reiterated its consistent stance, stating it is **"not neutral, India is on the side of peace,"** and fully supports efforts towards a peaceful resolution through dialogue and diplomacy. The timing of the summit and India's support were read as an endorsement of dialogue efforts, including those driven by the U.S. side, emphasizing that India seeks to be a valuable partner to all sides.



Constitutional & Legal Provisions

- **Directive Principles of State Policy (DPSP): Article 51** of the Constitution directs the State to endeavor to promote international peace and security, maintain just and honorable relations between nations, foster respect for international law and treaty obligations, and encourage settlement of international disputes by arbitration. India's independent foreign policy and balancing act align with this principle.
- **Legal Framework:** The bilateral relationship is institutionalized through the **Declaration on the India-Russia Strategic Partnership (2000)** and elevated to a **Special and Privileged Strategic Partnership (2010)**. Key mechanisms include the **India-Russia Intergovernmental Commission (IRIGC)** for Trade, Economic, Scientific, Technological, and Cultural Cooperation (IRIGC-TEC) and for Military & Military-Technical Cooperation (IRIGC-M&MTC).
- **Trade Mechanism:** The move towards trade settlement in national currencies is an administrative mechanism to **bypass sanctions risk** and is facilitated by various bilateral agreements on banking and financial messaging systems (e.g., linking SFMS/SPFS).



Definitions of Key Terms

- **Special and Privileged Strategic Partnership:** The highest level of diplomatic recognition and commitment India grants to a friendly nation, signifying cooperation across political, security, defence, trade, science, technology, and culture.
- **Northern Sea Route (NSR):** A shipping route officially defined by Russian law that extends along the Russian Arctic coast from the Kara Sea to the Bering Strait. Its increasing navigability due to climate change holds strategic and economic potential.
- **Multipolar World:** A global distribution of power in which more than two nation-states or centers of power influence international political, economic, or military relations. India and Russia both advocate for a multipolar world order.

UPSC Relevance

The 23rd India-Russia Summit is highly relevant for the UPSC Civil Services Exam:

- **GS II (International Relations):** Central to India's **Bilateral Relations** with key powers, its **Foreign Policy** in navigating geopolitical complexities (e.g., the Ukraine crisis, balancing US-Russia ties), and its role in multilateral forums (e.g., BRICS, SCO).
- **GS III (Economy & Security):** Directly related to **Energy Security** (oil imports, nuclear energy), **Defence Technology** and **Indigenisation (Make in India in defence)**, and the development of **Connectivity projects** (INSTC, Chennai-Vladivostok Corridor) crucial for trade and logistics efficiency.
- **Prelims:** Specific initiatives like **Programme 2030**, the **Chennai–Vladivostok Corridor**, and the **Northern Sea Route** are potential factual questions.

Conclusion

The 23rd India-Russia Summit successfully navigated the complexities of a fractured global order by re-engineering the bilateral relationship, shifting its focus towards sustainable economic cooperation, energy security, and new strategic areas like the Arctic and labor mobility. This determined push for a deeper, yet flexible, partnership underscores India's commitment to prioritizing its own economic and security imperatives while maintaining an independent foreign policy aimed at promoting dialogue and stability globally.

6. New Chapter in the Dragon-Elephant Tango: China's 15th Five-Year Plan

- **China's 15th Five-Year Plan (2026-2030) Focus:** The proposal for the 15th FYP, approved by the **CPC's 20th Central Committee**, signals China's commitment to continuous **high-quality development** and **high-level opening up**. This echoes the shift from rapid growth to a more **sustainable, balanced, and innovation-driven economy** (e.g., strengthening high-tech industries, self-reliance in science and technology, and green development). The FYP system provides **policy stability and continuity**—the fundamental reason for China's sustained success.
- **Shared Development Vision:** Both China and India are at critical stages of national development, with a shared priority on growth. China is pursuing the "**great rejuvenation of the nation through Chinese modernization**," while India strives toward its '**Viksit Bharat 2047**' vision (transforming India into a developed nation by 2047, based on pillars like Youth, Poor, Women, and Farmers). This parallel national focus creates broad scope for cooperation.



- **Deepening Economic and Industrial Synergy:** Economic cooperation is robust, with China being one of India's most important trading partners, where bilateral trade reached **\$138.46 billion in 2024**. Future collaboration is poised for industrial synergy: leveraging China's complete industrial system and strength in electronics/new energy/AI, and India's expertise in **IT, software development, and biopharma**, aiming to enhance both countries' positions in global value chains.
- **Multilateral Coordination on Global Governance:** As significant members of multilateral platforms like **BRICS, SCO, and G20**, both nations share a common interest in reforming the global governance system. They should enhance coordination to tackle global challenges such as **climate change, food security, and public health**, and jointly work towards a more **equal and orderly multipolar world** and a universally beneficial economic globalization.
- **People-to-People Ties as a Foundation:** Close contact between the people is recognized as key to sound bilateral relations, celebrating a history of thousands of years of friendly exchanges. Recent positive steps include the **resumption of Indian pilgrimages** to Xizang (Tibet) and the **reinstatement of tourist visas** for Chinese citizens, which will boost two-way visits by tourists, artists, and scholars.



Definitions of Key Terms

- **Five-Year Plan (FYP):** A series of social and economic development initiatives in the People's Republic of China. Since the 1st FYP (1953–1957), these plans have been a central mechanism for the state to manage and direct the national economy.
- **Chinese Modernization:** China's overarching development strategy to achieve the "great rejuvenation of the nation," characterized by a focus on high-quality development, technological self-reliance, common prosperity, and harmonious coexistence between humanity and nature.
- **Viksit Bharat 2047:** The Government of India's vision to transform the country into a **developed nation** by 2047, the centenary of its independence. It aims for a **\$30 trillion economy** built on inclusive growth, infrastructure, technology, and good governance.

Constitutional & Legal Provisions

- **Constitution of India (DPSP, Article 51):** Encourages the State to promote international peace and security and foster respect for international law and treaty obligations, which underpins the necessity of engaging constructively with major neighbors like China despite differences.
- **Panchsheel Principles:** The Five Principles of Peaceful Coexistence (Mutual respect for territorial integrity and sovereignty, Mutual non-aggression, Mutual non-interference, Equality and mutual benefit, and Peaceful coexistence) were formally articulated in the 1954 India-China Agreement on Tibet and continue to be cited as the ideal framework for diplomatic conduct.
- **Bilateral Trade Framework:** Trade is governed by the **Most Favoured Nation (MFN)** status under the **WTO**, along with various bilateral agreements on trade and investment, despite the persisting challenge of India's large **trade deficit** with China.

UPSC Relevance

This article is highly relevant for the UPSC Civil Services Exam:



- **GS II (International Relations):** Focuses on **India-China Bilateral Relations**—their current trajectory, areas of cooperation (trade, technology, multilateralism), and the strategic importance of coordination in global forums (BRICS, SCO). It highlights India's external environment.
- **GS III (Economy & Development):** Relates to **Comparative Economic Development** (China's FYP vs. India's Viksit Bharat vision), the role of **Trade and Investment** in the economy, and the significance of **Industrial Synergy** and **Global Value Chains**.
- **GS I (Society/Culture):** Addresses **People-to-People Contacts** and **Cultural Exchanges** (Yoga, pilgrimages) as soft power tools essential for rebuilding trust and confidence between the two civilizational states.

Conclusion

The approval of China's 15th Five-Year Plan and the positive emphasis on India-China cooperation, despite existing geopolitical frictions, underscore the shared developmental urgency of both Asian giants. By focusing on convergence in areas like trade, technology, and multilateral governance, and enhancing people-to-people exchanges, both nations can leverage their complementary strengths. The ability of India and China to manage their strategic competition while maximizing mutual economic benefits will not only be crucial for achieving 'Viksit Bharat' and 'Chinese Modernization' but will also serve as a pivotal anchor for global stability and inclusive economic growth.

7. Neurotechnology: India's Final Frontier in Health and Tech

- **Core Definition and Scope:** Neurotechnology involves mechanical tools that interact directly with the brain to **record, monitor, or influence neural activity**. The central technology is the **Brain-Computer Interface (BCI)**, which translates brain signals (like thoughts) into digital commands to control external devices (prosthetics, computers) or stimulate neural circuits (for therapy). BCIs can be **non-invasive** (e.g., EEG headsets) or **invasive** (implanted electrodes).
- **Significance for India's Disease Burden:** Neurotechnology offers critical solutions for India's substantial **neurological disease burden**, where non-communicable and injury-related neurological disorders are rising (with **stroke** being the largest contributor). BCIs and neuroprosthetics can potentially **restore mobility and communication** for paralyzed patients and offer targeted neural stimulation for mental health disorders (like depression/Parkinson's), reducing reliance on long-term medication.
- **Global Landscape and Competition:** The field is marked by intense global competition and government initiatives. The **U.S.** leads with programs like the **BRAIN Initiative** and companies like **Neuralink** (receiving FDA approval for in-human trials). China launched the **China Brain Project (2016-2030)** focusing on cognition, AI, and disorder treatment. This emerging technology is not just about healthcare but is a key intersection of **Biotechnology, Engineering, and AI**.
- **India's Status and Opportunities:** India is actively building strengths, with research centers like the **National Brain Research Centre (Manesar)** and the **Brain Research Centre (IISc, Bangalore)**. Research groups, such as at **IIT Kanpur**, are developing BCI-based technologies (e.g., robotic hands for stroke patients). India's **genomic diversity, available expertise, and growing competence** in AI





and engineering position it as a potential hub for neurotechnology development and an economic opportunity.

- **Critical Need for Tailored Regulation (Neurorights):** Given the powerful nature of BCIs, there is an urgent need for **adequate regulatory support** to prevent development from being thwarted. Regulatory pathways must be **tailored** to different BCIs based on risk and benefit, focusing on key ethical aspects like **data privacy** and **user autonomy**. Countries like the **EU and Chile** are pioneering laws specifically addressing BCIs and the concept of **neurorights** (the ethical principles related to nervous system interference).
- **Future Application (Therapeutic and Enhancement):** While current applications are primarily **therapeutic** (rehabilitation, neuroprosthetics), the technology holds future potential for **human enhancement** (cognitive or physical augmentation) and even **military advantage**. This possibility necessitates fierce ethical and public engagement debates before any such advanced applications can be adopted.

Constitutional & Legal Provisions

- **Fundamental Rights (Article 21):** The right to life and personal liberty, interpreted broadly by the Supreme Court, includes the **right to health** and the **right to dignity**. Neurotechnologies, particularly those that restore mobility or treat severe neurological disorders, can be argued to directly enhance the right to a dignified life.
- **Data Privacy (Justice Puttaswamy Judgment):** The Supreme Court recognized the **Right to Privacy** as a Fundamental Right under Article 21. BCI data, which involves highly sensitive neural signals and 'thoughts', constitutes one of the most private forms of data. This necessitates strong regulations (like the Digital Personal Data Protection Act, 2023) to ensure **data sovereignty** and prevent unauthorized collection or use of neural data.
- **Emerging Concepts (Neurorights):** While not explicitly codified in Indian law, the ethical challenges posed by BCIs (e.g., the ability to record or influence thoughts) necessitate future legal consideration of **Neurorights**, which typically include:
 - **Right to Mental Privacy:** Protection against the unauthorized scanning of brain data.
 - **Right to Mental Integrity:** Protection against unauthorized alteration of a person's neural activity.
 - **Right to Cognitive Liberty:** The freedom to make one's own decisions regarding the use of neurotechnology.

Definitions of Key Terms

- **Neurotechnology:** Mechanical tools, devices, or systems that create a direct link with the human nervous system (especially the brain) to either record activity or stimulate it.
- **Brain-Computer Interface (BCI):** A direct communication pathway between the brain and an external device. It measures brain activity (e.g., electrical signals from neurons) and translates them into commands or output.
- **Neuroprosthetics:** Devices that substitute for a motor, sensory, or cognitive function that has been damaged as a result of injury or disease. A BCI-controlled robotic arm is a form of neuroprosthetic.

UPSC Relevance

This topic is highly significant for the UPSC Civil Services Exam across several areas:



- **GS III (Science and Technology):** Directly covers emerging technologies (BCI, Neurotechnology), their application in **Biotechnology** and **AI**, and their potential to revolutionize healthcare, defense, and industry.
- **GS II (Governance, Health, & Ethics):** Relates to public health policy (addressing the neurological disease burden), the ethical and legal challenges of new technologies (Neurorights, Data Privacy of neural data), and the need for a dynamic regulatory framework.
- **GS III (Internal Security/Defense):** The mention of potential use for **military advantage** links neurotechnology to the domain of future strategic and defense technologies.

Conclusion

Neurotechnology, spearheaded by the development of Brain-Computer Interfaces, represents a final frontier with immense implications for health, technology, and fundamental human rights. For India, it presents a crucial dual opportunity: to address its significant neurological disease burden with cutting-edge therapeutic tools and to assert itself as a global leader in the intersection of AI and biotechnology. However, realizing this potential critically depends on establishing a proactive, tailored regulatory framework that champions scientific progress while strictly safeguarding the ethical dimensions of mental privacy and user autonomy.

8. DHRUVA: Digital Hub for Reference and Unique Virtual Address

- **Core Concept and Digital Public Infrastructure (DPI):** DHRUVA (Digital Hub for Reference and Unique Virtual Address) is a framework proposed by the Department of Posts to standardize and share physical addresses via unique, user-authorized "**labels**" (resembling email addresses, e.g., *amit@dhruva*). It is designed as a **Digital Public Infrastructure (DPI)**, similar to Aadhaar and UPI, aimed at enabling effective governance, inclusive service delivery, and enhanced user experience.
- **Mechanism and Consent-Based Sharing:** DHRUVA acts as a consent layer, tokenizing physical addresses like UPI tokenizes bank accounts. Users can generate a DHRUVA label, which, upon their authorization, allows service providers (India Post, e-commerce, gig platforms) to receive the full descriptive address and the **geo-coded DIGIPIN**. Users can thus **regulate** when, with whom, and for how long their address information is shared.
- **Integration with DIGIPIN:** DHRUVA integrates with **DIGIPIN**, a 10-digit alphanumeric, open-sourced location pin system developed in-house by India Post. DIGIPIN assigns a unique code to every **12 square meter block** in India. This geo-coding provides a **precise location fallback** for mail delivery, especially crucial in rural areas lacking descriptive addresses.
- **Ecosystem and Governance:** The DHRUVA ecosystem envisions multiple new entities: **Address Service Providers** (generating the proxy label), **Address Validation Agencies** (authenticating addresses), and **Address Information Agents** (managing user consent). The framework will be overseen by a dedicated governance entity, analogous to the **National Payments Corporation of India (NPCI)**.
- **Key Use Cases and Benefits:** Primary benefits include streamlining last-mile logistics for both public and private services, facilitating **seamless address updates** when users move, and aiding in **service discovery** by allowing digital platforms to show available doorstep services at a user's geo-coded location.





- **Regulatory Requirement and Urban Governance Challenge:** The shift to a consent-based mechanism requires a **draft law/amendment** to the **Post Office Act, 2023** for authorization and to regulate data collection. However, a key criticism is that DHRUVA links addresses to **people** (requiring consent), not independently surveyed **structures**. This reliance on personal consent could result in incomplete datasets, potentially limiting its effectiveness for comprehensive **urban planning and governance**.

Constitutional & Legal Provisions

- **Post Office Act, 2023:** DHRUVA's implementation and operation necessitate an amendment to the recently enacted Post Office Act, 2023, to provide the necessary legal backing and regulatory framework for a DPI that handles sensitive address and location data.
- **Digital Personal Data Protection (DPDP) Act, 2023:** Since DHRUVA relies on collecting and sharing personal information (address linked to identity), it must strictly adhere to the provisions of the DPDP Act, particularly those related to **consent (Data Principal)**, **data minimization**, and **data protection standards** for processing personal data.
- **Article 21 (Right to Privacy):** The use of a consent framework is essential to uphold the constitutional right to privacy, especially as DHRUVA aims to centralize and facilitate the sharing of a fundamental piece of personal data—the home address.

Definitions of Key Terms

- **Digital Public Infrastructure (DPI):** Shared digital systems built and utilized in the public sector, spanning capabilities for data/identity management (e.g., Aadhaar) or payments (e.g., UPI). DHRUVA aims to be the DPI for address management.
- **Geo-coded:** An address or location that has been assigned precise geographic coordinates (latitude and longitude).
- **Tokenising/Label:** In the context of DPIs, it means replacing sensitive personal information (like an address or bank account number) with a unique proxy identifier (the DHRUVA label) that is shared with the service provider, while the original data remains secure and controlled by the user via a consent layer.

UPSC Relevance

DHRUVA is highly relevant for the UPSC Civil Services Exam:

- **GS II (Governance & Policy):** Covers **e-Governance**, the creation and utilization of **Digital Public Infrastructure (DPI)** for public service delivery, and the legal framework (**DPDP Act**) governing data sharing and privacy.
- **GS III (Economy, Science & Technology):** Relates to **Logistics and Supply Chain Management** (boosting efficiency of e-commerce/India Post), the application of **geo-spatial technology** (DIGIPIN), and the role of the government in fostering digital ecosystems.
- **Prelims:** The terms **DHRUVA**, **DIGIPIN**, and the governing ministry/department (Department of Posts/Ministry of Communications) are direct factual questions.

Conclusion

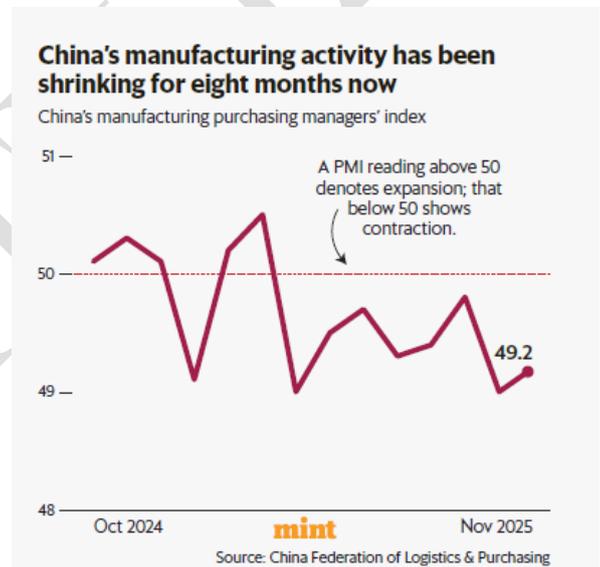
The DHRUVA framework represents an ambitious leap by the Department of Posts to modernize address management in India by leveraging geo-spatial technology (DIGIPIN) and the DPI model. By introducing a consent-based system, it promises to significantly enhance logistics efficiency and user control over personal



data, aligning with the DPDP Act. Its ultimate success, however, hinges on establishing clear legal authorization and addressing critiques related to its utility for urban planning, where the focus on individual-linked addresses might limit its potential for comprehensive structural mapping.

9. China's Economic Slowdown: Drivers and Implications

- **Contraction in Core Growth Drivers:** China is facing a sharp economic slowdown driven by persistent weakness in its traditional growth pillars. **Manufacturing activity** has contracted for eight consecutive months (PMI at 49.2), fueled by **overcapacity ('involution')** leading to price wars and profit decline (industrial profits fell 5.5%). **Fixed-Asset Investment** recorded its steepest drop since 2020, primarily due to a prolonged **property sector crisis** (investment fell 14.7%, home prices slid 8%).
- **Weak Domestic Demand and Deflationary Mindset:** **Domestic consumer confidence** is profoundly weak, reflected in decelerating **retail sales growth** (2.9% in October, the fifth consecutive monthly deceleration). Households are adopting a **'deflationary mindset,'** delaying major purchases and hoarding cash (deposits at 120% of GDP), driven by wealth erosion from the property crisis and a soft labor market.
- **External Sector Volatility and Re-direction:** The external sector shows volatility; exports contracted by 1.1% in October following a period of **'front-loading'** to avoid US tariffs. However, manufacturers successfully **redirected shipments** aggressively, with double-digit growth in sales to **Southeast Asia and Africa**, allowing the annual trade surplus to remain on track to exceed a record \$1 trillion. Imports grew only 1%, further underscoring weak domestic demand for global commodities.
- **Shift to 'New Productive Forces' and Transition Cost:** Beijing is consciously pivoting its growth strategy away from the old debt-fueled property/infrastructure model toward **'new productive forces'**—high-tech manufacturing, AI, and green energy (e.g., EVs, solar). This transition, enforced by an **'anti-involution'** policy to curb wasteful competition and overcapacity, is proving costly in the short term, contributing to the slowdown in traditional sectors.
- **Future Outlook and Geopolitical Implications:** The **IMF projects China's GDP growth to decelerate sharply** to 4.2% by 2026 and 3.4% by 2030, driven by the property sector crisis and weak consumption. Despite the slowdown, China retains influence in high-tech and maintains dominance over **rare-earth minerals**, which it leveraged to secure a trade truce with the U.S. (pausing rare-earth controls and resuming US soybean purchases).



Definitions of Key Terms

- **Involution:** A term used to describe the phenomenon of price competition, profit erosion, and overall stagnation that occurs due to **overcapacity** and fierce internal competition within mature industrial sectors in China (e.g., solar, EVs).
- **Deflationary Mindset:** A psychological state where consumers anticipate that prices will fall in the future, leading them to delay purchases and increase savings, which further suppresses demand and exacerbates economic slowdown/deflation.



- **Front-loading:** Accelerating shipments of exports (shipping them "up front") ahead of an anticipated event, such as the imposition of new tariffs, to avoid higher costs or regulatory hurdles.
- **Purchasing Managers' Index (PMI):** A composite index that measures the direction of economic trends in the manufacturing (or service) sector. A reading **above 50** indicates expansion, while a reading **below 50** indicates contraction.

Constitutional & Legal Provisions

- **Centralized Economic Planning:** The Communist Party of China (CPC) uses highly **centralized and unified leadership** to enforce its economic will, primarily through the **Five-Year Plans (FYPs)**. These plans serve as the primary legal and policy blueprints guiding all state and private sector investment, resource allocation, and structural transitions (like the current pivot to 'new productive forces').
- **Trade Policy Instruments:** China's dominance in **rare-earth minerals** is a strategic asset subject to state control, allowing it to exert leverage in international trade disputes (e.g., securing the trade truce). These controls are often implemented through export licenses and other non-tariff barriers, aligning with national security and industrial goals.

UPSC Relevance

The sharp slowdown in the Chinese economy is critical for the UPSC Civil Services Exam across several dimensions:

- **GS III (Economy & International Trade):** Directly relevant to **Global Economic Trends**, the concept of the **Middle-Income Trap**, the challenges of **debt-fueled growth models**, and the impact of the **Chinese economy on India's growth, trade, and regional supply chains**. The concept of 'Involution' is a key analytical term.
- **GS II (International Relations):** Covers **Sino-US Trade Relations**, the use of economic leverage (e.g., rare-earth minerals) in geopolitics, and the implications of China's domestic troubles on its **foreign policy engagement** with countries like India.
- **Prelims:** Factual data like the **PMI threshold (50)**, key economic indicators (GDP projections, trade surplus), and the role of the CPC in economic management are important.

Conclusion

China is currently navigating a complex and structural economic slowdown, marked by persistent contraction in its industrial base, a profound crisis in the property sector, and a deepening 'deflationary mindset' among its consumers. While the government is strategically pivoting towards high-tech 'new productive forces' to secure long-term growth, this transition is causing short-term friction. The outcome of this structural adjustment will not only determine China's ability to avoid the middle-income trap but will also have significant and far-reaching implications for global demand, supply chain resilience, and India's own economic and strategic planning.

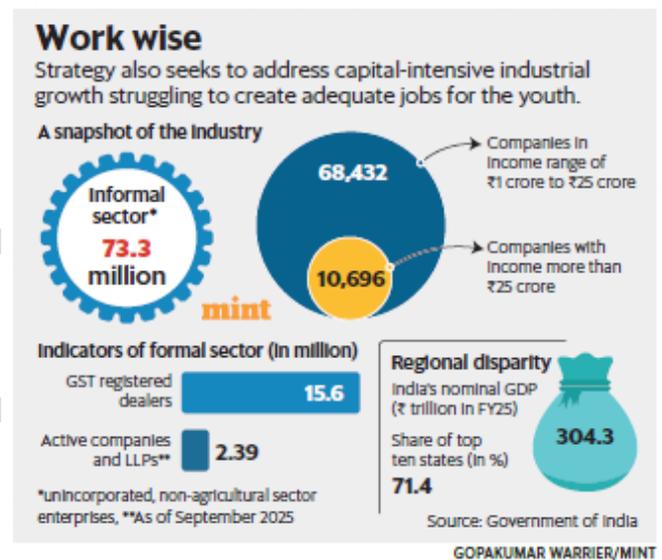
10. FY27 Budget Focus: Accelerating Job-Intensive Sectors

- **Strategic Shift to Job-Absorbing Growth:** The Union Budget for FY27 is expected to significantly **reinforce and expand focus on labour-intensive sectors** (like textiles, leather/footwear, gems/jewellery, handicrafts) and small and medium industries. This strategy is critical to fully realizing India's **demographic dividend** over the next 25 years and solving the core structural



problem of **capital-intensive industrial growth** that struggles to create adequate jobs for the large youthful workforce.

- **Addressing the 'Missing Middle':** A key structural objective is to address the **'missing middle'** problem in India's enterprise landscape, which is characterized by a high number of tiny, informal enterprises and a few large corporations, but a lack of robust **mid-sized businesses**. Policy is aimed at fostering the growth of strong mid-sized enterprises to sustainably support economic growth and high-productivity job creation, drawing lessons from successful East Asian growth models (China, South Korea, Vietnam).
- **Preventing the Middle-Income Trap:** The push for labour-intensive, productivity-driven growth is fundamentally a strategy to prevent India from falling into the **Middle-Income Trap**. India, currently a lower-middle-income economy (per capita income \approx \$2,700), must sustain rapid, job-led growth to avoid plateauing at this level and failing to transition to high-income status, a path successfully navigated by countries like South Korea.
- **Support through New Schemes and Labour Codes:** The government's renewed focus will likely manifest through **new scheme announcements and expansion of existing schemes** specifically for the targeted labour-intensive sectors. This policy thrust follows the recent rollout of the **four consolidated Labour Codes** (Code on Wages, Social Security Code, etc.), which aim to simplify compliance, enhance worker safety, and provide social security, thereby creating a more predictable and investor-friendly environment for job creation.
- **Synergistic Social Investments:** The strategy recognizes that maximizing the demographic dividend requires a balanced approach. Therefore, the drive to strengthen labour-absorbing sectors will be coupled with sustained **investments in education and health**—the foundational pillars required to transform a large working-age population into a highly productive and skilled workforce.



Definitions of Key Terms

- **Labour-Intensive Industry:** An industry where the cost of labour (wages) constitutes a relatively high proportion of the total cost of production, making it a major employer (e.g., textiles, apparel, construction).
- **Demographic Dividend:** The economic growth potential that can result from shifts in a population's age structure, mainly when the share of the working-age population (15 to 64) is larger than the non-working-age share.
- **Middle-Income Trap:** A situation in which a country achieves a middle-income status (World Bank defines lower-middle-income as per capita GNI of \$1,136 to \$4,465) but fails to transition to high-income status because it loses its competitive advantage in manufactured exports due to rising wages but cannot compete with advanced economies in high-value-added innovation.

Constitutional & Legal Provisions



- **Directive Principles of State Policy (DPSP): Article 39(a)** directs the State to ensure that citizens, men and women equally, have the right to an adequate means of livelihood. **Article 43** mandates the State to endeavor to secure for all workers a living wage and conditions of work ensuring a decent standard of life. The focus on job-intensive sectors and welfare schemes aligns directly with these socio-economic DPSP goals.
- **Four Labour Codes:** These codes—the **Code on Wages, 2019**; the **Industrial Relations Code, 2020**; the **Code on Social Security, 2020**; and the **Occupational Safety, Health and Working Conditions Code, 2020**—consolidate 29 Central laws, aiming to establish universal minimum wages, extend social security to the informal and gig economy, and simplify compliance for industries to encourage scaling and formal job creation.

UPSC Relevance

The planned budget focus is highly relevant for the UPSC Civil Services Exam:

- **GS III (Indian Economy & Development):** Essential for understanding **Employment & Job Creation** strategies, addressing the "**Missing Middle**" problem, and policy efforts to **avoid the Middle-Income Trap**. It also links to the performance of core **Manufacturing Sectors** (Textiles, MSMEs) and their role in realizing *Viksit Bharat*.
- **GS I & GS II (Social Issues & Governance):** Directly relates to the concept of **Demographic Dividend** and the policy steps needed in health, education, and employment to capitalize on it. The implementation of the **Labour Codes** is a critical governance and legal reform topic.

Conclusion

The Union Budget's renewed emphasis on labour-intensive sectors, backed by the recent simplification of the labour framework, is a timely and strategic policy move. It directly targets India's core economic challenge: generating millions of high-productivity jobs to leverage its youthful population and propel its transition from a lower-middle-income to a high-income economy. Success requires sustained, long-term policy consistency that encourages the growth of mid-sized firms while effectively integrating education and health investments with industrial policy.

11. CAFE-III Norms: The Super-Credit vs. EV Target Debate

- **CAFE Norms and Proposed CAFE-III:** The **Corporate Average Fuel-Efficiency (CAFE) Norms** are government-mandated standards that regulate the **fleet-wide average CO_2 emissions** (measured in g/km) of a manufacturer's passenger vehicles. Draft **CAFE-III norms (FY27 to FY32)** propose stricter targets, mandating fleet-average emissions down to **$91.7 \text{ g}/\text{km}$ by 2032** (from $113 \text{ g}/\text{km}$ under CAFE-II), aimed at accelerating electrification and efficiency.
- **Controversy over 'Super-Credits':** The core dispute is over the inclusion and multiplier factor of '**super-credits**' for Electric Vehicles (EVs) and hybrids. The draft norms propose counting a pure EV three times (or four times in some proposed versions) when calculating a company's fleet average. Global agencies like the **International Road Federation (IRF)** argue that these high artificial benefits should be **eliminated**, as they allow compliance through regulatory shortcuts rather than real fleet-wide emission reduction efforts.





- **Norms Lag Behind Industry's Voluntary Targets:** Analysis by the **International Council on Clean Transportation (ICCT)** suggests that even with the revised CAFE-III norms, the resulting EV share in total car sales would only reach **\$10-11\%\$ by 2030**. This is significantly below the voluntary public commitments made by major Indian Original Equipment Manufacturers (OEMs), such as Tata Motors and Mahindra & Mahindra, which are targeting an EV penetration of up to **\$30\%\$ by 2030**.
- **Industry Divide on Concessions:** The auto industry, represented by **SIAM** (Society of Indian Automobile Manufacturers), is divided. While SIAM generally pushed for higher super-credit factors for EVs (to encourage investment), there's a separate division over the weight-based exemption for small petrol cars, which gives an easier target to lightweight small cars. Automakers with a high share of small cars (like Maruti Suzuki) support this, but rivals (like Tata Motors) oppose it, arguing it compromises vehicle safety and is arbitrary.
- **Wider Policy Implications:** The debate highlights the tension between achieving aggressive decarbonization targets (**India's Net Zero 2070 commitment**) and supporting the profitability/sustainability of the auto sector, which is making massive investments in the EV value chain. Policymakers must balance the need for affordability (protecting small cars) with the imperative of driving real technological advancements toward zero-emission mobility.

Definitions of Key Terms

- **Corporate Average Fuel-Efficiency (CAFE) Norms:** Regulatory standards that require an automobile manufacturer to ensure the **sales-volume weighted average** CO_2 emissions of their entire fleet of passenger vehicles sold in a fiscal year do not exceed a government-specified target.
- **Super-Credits:** A regulatory mechanism within CAFE norms where vehicles with very low or zero emissions (like EVs and Strong Hybrids) are counted with a **multiplier** (e.g., 3x or 4x) when calculating the fleet average. This artificially reduces a manufacturer's reported average CO_2 emissions, easing compliance with the overall target.
- **Fleet-Wide Average:** The emission or fuel-efficiency figure calculated by taking the weighted average of all passenger vehicle models sold by a manufacturer in a given year, where the weight is the sales volume of each model.

Constitutional & Legal Provisions

- **Energy Conservation Act, 2001 (ECA):** The CAFE norms are formulated by the **Bureau of Energy Efficiency (BEE)**, a statutory body established under the Ministry of Power by the ECA. The Act and its amendments provide the legal basis for setting and enforcing fuel efficiency and CO_2 emission standards and levying penalties for non-compliance.
- **Article 48A (DPSP):** This Directive Principle of State Policy mandates the State to endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country. CAFE norms directly align with this by mitigating climate change and air pollution from the transport sector.
- **International Commitments:** CAFE norms form a crucial part of India's commitment to reducing the carbon intensity of its economy, aligning with its **Nationally Determined Contributions (NDCs)** under the **Paris Agreement** and the target of achieving **Net Zero emissions by 2070**.

UPSC Relevance



This topic is highly relevant for the UPSC Civil Services Exam:

- **GS III (Environment, Economy & S&T):** It covers **Climate Change Mitigation** strategies, **Air Pollution Control** (CAFE vs. BS norms distinction is important), **Sustainable Transportation**, and the interface of **Industrial Policy** with environmental regulation. The role of the **BEE** and the **Energy Conservation Act** is a key administrative detail.
- **GS II (Governance & Policy):** The debate reflects the challenge of **policy formulation** involving multiple stakeholders (Government, Global Agencies, Industry-SIAM, and specific OEMs), highlighting issues of **regulatory capture** and the use of market-based mechanisms (super-credits).

Conclusion

The CAFE-III norms represent India's necessary tightening of emission standards to drive green mobility and fulfill climate goals. The central debate surrounding the 'super-credits' mechanism underscores a fundamental tension: whether regulatory flexibility should prioritize encouraging investment in EVs or enforce stricter, technology-neutral standards that yield real and observable emission reductions across the entire vehicle fleet. An effective final policy must leverage the industry's own ambitious EV targets by setting compliance standards that are stringent enough to ensure rapid decarbonization without compromising vehicle safety or affordability for the mass market.

12. The Twin Burden: Influenza Surge and Air Pollution

- **Sharp Surge Driven by H3N2 Subtype:** India is currently experiencing a **significant surge in influenza cases**, with the latest surveillance data from the **Indian Council of Medical Research (ICMR)** identifying the **H3N2 subtype** as the dominant strain. H3N2 is known to cause **more severe infections** and necessitate higher rates of hospitalization compared to other seasonal flu strains. The positivity rate in samples peaked significantly at **12-13%** by late November, showing a steep upward trajectory as winter sets in.
- **Air Pollution as a Major Exacerbator (Twin Burden):** Hazardous levels of **air pollution**, particularly **Particulate Matter 2.5 (PM_{2.5})**, are creating a "**twin burden**" that is worsening the public health crisis. **PM_{2.5}** damages the respiratory tract's protective lining (epithelium), causing inflammation and making the lungs more susceptible to viral attachment.
- **Worsened Severity and Prolonged Recovery:** The convergence of the H3N2 virus and high pollution levels is **worsening the severity** of symptoms (breathlessness, coughing, wheezing) and **significantly prolonging recovery times**, especially for high-risk groups including infants, pregnant women, and individuals with chronic conditions.
- **Geographical and Seasonal Trends:** The spike began sharply in **late September** (coinciding with the monsoon withdrawal) and peaked in November, confirming the seasonal nature of the virus spreading rapidly with the onset of winter. While the surge is nationwide, the states and regions reporting the highest case numbers requiring focused surveillance are **Kerala, Delhi, Maharashtra, Tamil Nadu, Gujarat, and Puducherry**.
- **Government Response and Healthcare Preparedness:** Recognizing the severity of the situation, the Union Health Minister has directed a **comprehensive review of preparedness** in all district





hospitals and medical colleges. The focus of the healthcare system remains on **early diagnosis** and ensuring **timely antiviral therapy** for high-risk patients to manage the heavy load on outpatient departments.

Definitions of Key Terms

- **H3N2:** A subtype of the Influenza A virus, responsible for seasonal flu outbreaks. Its nomenclature refers to the types of hemagglutinin (H) and neuraminidase (N) proteins on its surface. It is often associated with more severe symptoms.
- **Particulate Matter 2.5 ($\text{PM}_{2.5}$):** Ultrafine inhalable particles less than 2.5 micrometers in diameter. These are small enough to penetrate deep into the respiratory tract and the bloodstream, causing systemic inflammation and damage.
- **Severe Acute Respiratory Infections (SARI):** A clinical definition used for surveillance, typically referring to an acute respiratory infection with a history of fever or measured fever, and cough, with onset within the last 10 days, requiring hospitalization.

Constitutional & Legal Provisions

- **Article 21 (Right to Health):** The surge and the exacerbation by pollution directly infringe upon the citizens' fundamental **Right to Life (Article 21)**, which the Supreme Court has interpreted to include the **Right to Health** and the **Right to a Healthy Environment**. This places a constitutional obligation on the State to manage both the infectious disease outbreak and the environmental hazard.
- **National Health Policy (NHP), 2017:** The policy aims for the highest attainable standard of health and well-being. The ICMR's role in surveillance and the Ministry's focus on preparedness align with NHP goals for **Strengthening Public Health Systems** and **Disease Surveillance (IDSP)**.
- **Air (Prevention and Control of Pollution) Act, 1981:** The primary Central legislation governing air pollution control, which grants powers to Central and State Pollution Control Boards (CPCB/SPCBs) to enforce emission standards and manage pollution sources, which is necessary to reduce the exacerbating factor ($\text{PM}_{2.5}$).

UPSC Relevance

This topic is highly relevant for the UPSC Civil Services Exam:

- **GS III (Environment & Science and Technology):** Directly covers the impact of **Air Pollution ($\text{PM}_{2.5}$)** on public health and the dynamics of **Infectious Disease Epidemiology** (H3N2, seasonal surge). This illustrates the complex interaction between environmental degradation and public health outcomes.
- **GS II (Governance & Health):** Focuses on the performance of the **Public Health System** (ICMR surveillance, hospital preparedness, antiviral therapy), the challenge of managing a **Twin Burden** crisis, and the role of the Union Ministry in directing a coordinated response.
- **Prelims:** Specific terms like **H3N2**, $\text{PM}_{2.5}$, **SARI**, and the role of the **ICMR** are frequently tested facts.

Conclusion

The simultaneous surge of the severe H3N2 influenza strain and hazardous air pollution levels represents a critical public health crisis—the "twin burden"—that significantly magnifies the severity and recovery period of respiratory illness in India. The government's focused review of health preparedness and the reliance on ICMR surveillance are essential. However, achieving sustained relief requires not only effective



antiviral management but also stringent, long-term policy interventions under the Air Act to mitigate the environmental factor ($\text{PM}_{2.5}$), thereby fulfilling the constitutional obligation to secure a healthy environment and life for all citizens.

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