NEF Brew

Monthly Insights

UNION BUDGET: INTEGRATING AI INTO INDIA'S GROWTH STORY

February, 2026
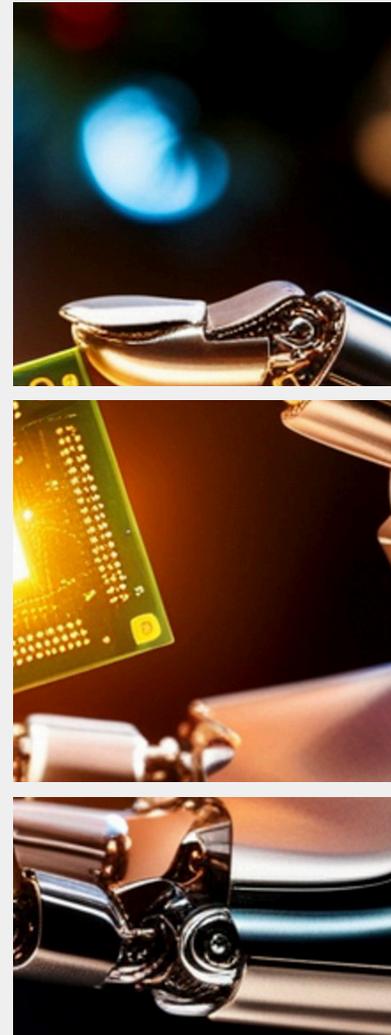
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Executive Director's Message

The February edition of NEF Brew examines a question central to India's economic trajectory - Is Artificial Intelligence being integrated into our growth strategy with the urgency and scale the moment demands?

AI is no longer a sectoral technology theme. It is economic infrastructure. Just as power grids, highways and telecommunications once defined phases of national transformation, compute capacity, data ecosystems and algorithmic intelligence now determine productivity, competitiveness and geopolitical leverage.

The Union Budget signals that this shift has been recognised. Through the strengthening of the IndiaAI Mission, expanded access to compute, structured public datasets, AI skilling initiatives and continued thrust in semiconductor and electronics manufacturing, the Government has indicated that AI is to be treated as a national capability, not merely a private innovation tool.

This is the correct strategic frame.

At the recently concluded AI Impact Summit, the conversation moved beyond enthusiasm to execution. Three imperatives stood out clearly:

- Sovereign and scalable compute infrastructure must be built with speed.
- AI governance must balance innovation with accountability and trust.
- AI deployment must target productivity and state capacity - not remain confined to pilot projects.

India does not need to win a symbolic race for the largest foundational model. It must win the race to integrate intelligence across its real economy. Governance platforms, MSMEs, agriculture systems, logistics networks, healthcare delivery and financial inclusion pipelines represent areas where AI integration can generate sustained national advantage.

India's historical strength has been integration at scale. DPI demonstrated this capability. The next phase is to layer AI onto that foundation with coherence and strategic discipline. However, intent must translate into systems.

Compute capacity requires reliable and affordable energy. Model development demands high-quality datasets and research depth. Skilling programmes must anticipate workforce disruption, not merely respond to it. Institutions must adapt procurement frameworks, regulatory mechanisms and operational processes to meaningfully absorb AI tools. Without institutional readiness, fiscal allocations risk fragmentation rather than transformation.

The global AI ecosystem remains concentrated in a handful of economies that control chips, hyperscale infrastructure and frontier research. India cannot afford complacency, nor can it afford fatalism. Strategic resilience in the AI era does not mean isolation; it means building capability depth while remaining globally engaged.

The labour dimension deserves equal candour. AI will compress, redefine and in some cases eliminate existing roles, including segments of services that have powered India's export growth. The appropriate response is not resistance, but preparation - rapid reskilling, domain specialisation and the creation of AI-enabled industries that move India up the value chain.

The integration of AI into fiscal planning marks a structural inflection point. If executed decisively, it can enhance productivity, improve governance efficiency and strengthen India's economic sovereignty. If pursued hesitantly, it risks deepening dependence on external AI ecosystems.

This is not a routine budget cycle. It is a strategic recalibration.

Strengthening NEF's Public Platforms

As India navigates this transition, informed debate becomes indispensable. NEF is strengthening its own platforms accordingly.

We are reviving *NEF Charcha*, our policy dialogue series, to convene substantive conversations among economists, technologists, regulators and industry leaders. Structural shifts require structured dialogue.

We are also launching *NEF ECON90* - concise, under-120-second infographic explainers that distil complex economic and policy issues into accessible insights without sacrificing rigour. In a time of rapid disruption, clarity is a public responsibility.

NEF remains committed to advancing evidence-based analysis as India integrates AI into its economic architecture. The AI era will reward nations that move from intention to implementation. India has signalled intent. Strategic execution will determine whether that intent translates into durable advantage.

Jagdip Rana
Executive Director

Fresh Off the Press

From Sandbox to Scale: How Budget 2026-27 Moves IndiaAI from Research to Deployment

The Ministry of Electronics and IT and the Union Budget 2026-27 pivot decisively from laboratory-scale AI experimentation to production-grade deployments by aligning fiscal incentives, compute access and manufacturing policy. The Budget introduces a tax-holiday regime to incentivise global cloud and AI data-centre investment and fast-tracks the India Semiconductor Mission 2.0 and PLI extensions - measures aimed at reducing capex and localisation bottlenecks that previously constrained scale-up.

Operationally, the IndiaAI platform's real-world impact is measurable - the government opened access to an existing pool of over 38,000 high-end GPUs at ₹65/hour, lowering marginal compute costs for startups, research labs and public institutions and enabling transition of pilots into continuous services. This commoditisation of compute materially narrows the gap between prototype and production.

Complementary governance and convening actions - notably the India-AI Impact Summit and coordinated agency roadmaps - mobilise demand-side pilots across ministries (health, agriculture, logistics) and signal procurement pipelines for validated AI tools, reducing market uncertainty for vendors.

Albeit, policy risks remain - workforce supply and ethical governance need rapid scaling. Experts' prescriptions for a unified AI skilling engine and the World Bank emphasis on inclusive institutions indicate that fiscal nudges must be paired with skilling and governance to convert scale incentives into equitable, resilient deployments.
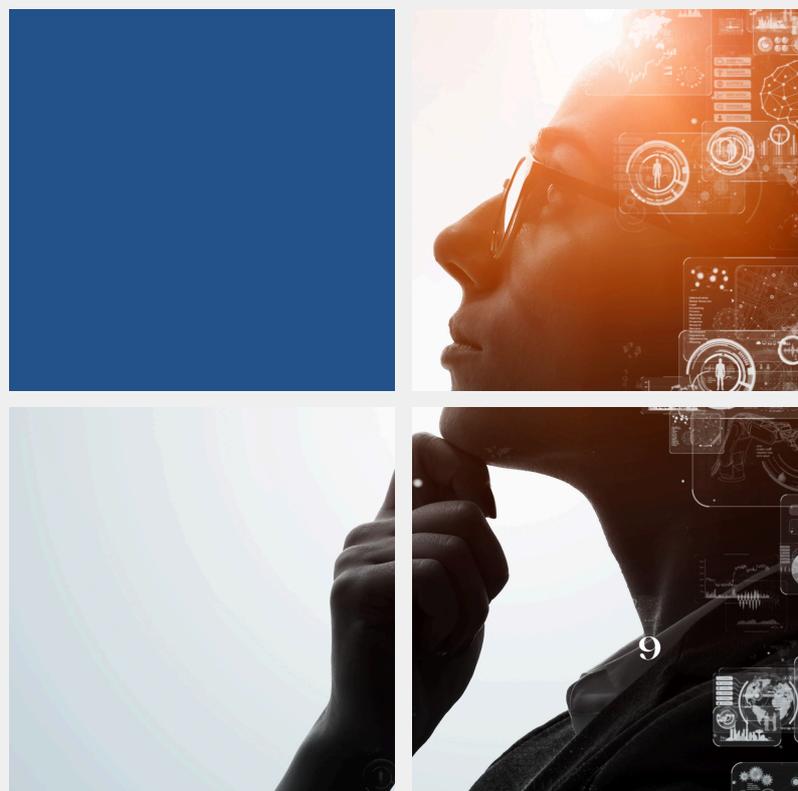
The Evolution of India's Techno-Legal Framework: AI Governance in 2026

The transformation of India's digital legal framework in the past twenty-five years signifies a significant shift from conventional governance, as the country transitions to an AI-enhanced governmental structure. The evolution of India's legal framework from the Information Technology Act, 2000 to the current period of AI integration signifies a profound transition from handling 'data as records' to overseeing 'data as intelligence'. Unlike the European Union's prescriptive and often rigid 'AI Act' framework, India has implemented a pro-innovation, techno-legal approach that prioritises adaptability, utilising a blend of existing legislation supplemented by 'soft law' directives and prompt, sector-specific initiatives.

Prime Minister Narendra Modi's Moral, Accountable, National Sovereignty, Accessible, Valid (MANAV) Vision, presented at the India AI Impact Summit 2026, has become the gold standard for Indian AI regulation. The strategic basis of this strategy was established late last year when the Ministry of Electronics and Information Technology (MeitY) formalised the India AI Governance Guidelines. These rules delineate the ethical '*Sutras*' for the ecosystem, underscoring human-centric design, openness and accountability without the rapid imposition of enforceable primary legislation. The establishment of the IndiaAI Safety Institute and

an inter-ministerial AI Governance Group indicates the government's transition to a 'compliance-by-design' approach. This ideology promotes the integration of technical controls, such as digital watermarking and bias detection, directly into the AI development lifecycle, ensuring that innovation is responsible from the initial line of code.

India's regulatory efficacy is rooted in its capacity to implement technology-neutral legislation in response to contemporary AI-related issues. On February 20, 2026, a significant development transpired when MeitY notified the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2026. This regulation especially addresses Synthetically Generated Information (SGI), requiring that AI-generated content carry prominent labels to ensure it is identifiable. A significant change in this regulation update is the adjustment of platform immunity. Section 79 of the IT Act still protects the 'Safe Harbour' shield, but it will only stay in place provided these new requirements are actively enforced. Platforms are no longer just passive conduits; they are now required to use automated detection systems to stop and neutralise harmful synthetic media, especially non-consensual deepfakes, within short response times that can be as short as two hours for sensitive content.

The Digital Personal Data Protection Act (DPDPA), 2023, establishes substantial regulations for the training of Large Language Models (LLMs). AI developers functioning as Data Fiduciaries must operate inside a consent-focused framework, wherein the extraction of personal data for training necessitates explicit legal justifications. This has required a shift towards high-quality synthetic or anonymised datasets to prevent violating the rights of 'Data Principals', who now have the legal right to demand transparency in automated choices. When these digital protections are compromised, the Bharatiya Nyaya Sanhita (BNS), 2023, offers the legal framework required to pursue AI-driven fraud and organised cybercrime, while the Consumer Protection Act mandates stringent product liability for manufacturers for algorithmic damages.

The future indicates a transition towards more regulatory control with the expected implementation of the Digital India Act (DIA) and the Artificial Intelligence (Ethics and Accountability) Bill, 2025, which was introduced as a Private Member's Bill. The forthcoming guidelines are anticipated to implement a risk-based classification system for AI applications, likely enforcing more stringent audit requirements on high-risk industries such as law enforcement and healthcare. The primary problem persists in the enforcement gap; as AI systems gain greater autonomy, the judicial ability to analyse intricate digital evidence under the Bharatiya Sakshya Adhiniyam (BSA), 2023 (the new Evidence Act), will be scrutinised. Practitioners must prioritise the adoption of international standards such as ISO/IEC 42001 and do comprehensive techno-legal audits to uphold confidence in a more synthetic environment. India has effectively circumvented the 'innovation dampener' of excessive regulation; however, the genuine assessment of this balanced strategy will be its durability as AI expansion continues to surpass conventional legislative timelines.

Silicon Sultans or Digital Divestment?
India's High-Stakes Gamble on 'Yuva Shakti'

In the 2026 Budget, the Indian government has conducted a bold work of rhetorical alchemy, transforming the looming specter of 'AI-induced job displacement' into a shiny new talisman dubbed 'Yuva Shakti'. For years, the narrative around automation was one of a digital guillotine poised over the heads of India's millions of coders and call-centre executives. However, the current administration has doubled down on a different bet, that, by treating the country's youth as a programmable asset rather than a

liability, India can skip the existential crisis of the West and move straight to becoming the world's premier 'Intelligence-as-a-Service' hub.

At the heart of this audacious pivot sits the Education to Employment and Enterprise (EEE) Standing Committee, a high-powered body proposed in the Budget to recommend measures for the services sector as a core driver of Viksit Bharat. The committee's mandate is to dismantle the silos between stagnant academic curricula and the hyper-mutating demands of the global AI market, aiming for a 10% global share in services by 2047.

The EEE Standing Committee is far more than a bureaucratic acronym; it is a clinical intervention into an education system that has historically struggled to outpace its own obsolescence. By integrating AI literacy from the primary level upward, specifically through the AI & Computational Thinking (CT) initiative starting from Grade 3, the government is attempting to 'hard-wire' the next generation for a hybrid economy. The logic is compelling, i.e., if the machines are coming for routine tasks, the Indian worker must move 'up-stack' into the realms of creative problem-solving and algorithmic oversight.

This strategy is most visible in the aggressive push for the 'Orange Economy' where the Budget has allocated ₹250 crore to the Indian

Institute of Creative Technologies (IICT), Mumbai, to establish 15,000 Animation, Visual Effects, Gaming, and Comics (AVGC) Content Creator Labs in secondary schools. This initiative aims to turn the leisure-time obsession of Gen Z into a professional-grade VFX powerhouse, projected to require 2 million professionals by 2030.

Yet, a critical analysis reveals that this techno-optimism sits on a razor's edge. While the EEE framework focuses heavily on the 'fresh' workforce, it risks leaving a massive 'middle-management' vacuum. Reskilling a twenty-year-old in prompt engineering is significantly easier than retooling a forty-year-old whose legacy coding skills have been rendered redundant overnight by autonomous agents. Although, the Budget increased the skills budget by 62% to ₹9,886 crore, practitioners warn that corporate reskilling must supplement government efforts to avoid a 'talent scarcity' in deep tech.

Furthermore, the EEE's vision of 'Enterprise' relies on the assumption that capital will flow into small-scale AI startups as readily as it did into e-commerce giants. Without a robust safety net for those who fail to catch the 'AI wave' the Viksit Bharat@2047 goal could inadvertently widen the chasm between the digital elite and the technologically disenfranchised.

The true test of the EEE Standing Committee will not be in how many tablets it distributes, but in its ability to force a marriage between the rigid structures of the public sector and the mercurial speed of private tech giants. For India to truly harness its 'Yuva Shakti', it must ensure that its AI-ready youth are not just becoming high-end digital janitors for Western LLMs, but are building the sovereign AI infrastructure that the Global South desperately needs. The budget has laid the tracks and the EEE has provided the map, but in the volatile climate of 2026, the engine of Indian labour must run faster than the algorithms trying to replace it.

Orange is the New Gold:
India's Creative AI Renaissance

The Union Budget 2026-27 signals a profound paradigm shift in India's economic philosophy, transitioning from a traditional service-export model toward a high-value Orange Economy, an ecosystem where growth is predicated on intellectual property, creativity and technological synthesis. By integrating AI into the creative and industrial sectors, the government is moving beyond 'basic literacy' to institutionalise 'future-ready employability'. This strategic pivot acknowledges that in an era of generative displacement, the only resilient labour force is one that can command machines rather than compete with them.

At the heart of India's Orange Economy push is a deliberate effort to democratise creativity by embedding AVGC creator labs across thousands of secondary schools and hundreds of colleges. Anchored by the Indian Institute of Creative Technologies, this initiative integrates digital storytelling and AI-native creative practices into early education while proactively building a future-ready talent pipeline to meet the sector's rapidly growing workforce demands. By shifting the pedagogical focus from 'outsourced execution' to 'original IP creation', India is positioning its youth to capture a larger share of global creative royalties, effectively turning cultural capital into a tradeable commodity.

However, the rapid obsolescence of technical skills necessitates a new form of agile governance, which the Budget addresses through the E3 Standing Committee. Unlike static educational boards of the past, the E3 is designed as a high-frequency regulatory body tasked with assessing the disruptive impact of AI on job roles and updating national curricula every six months. This 'just-in-time' education model ensures that the transition from classroom to industry is seamless, minimising the skill gap that has historically plagued the Indian labour market. The analytical focus here is not on human replacement but

on AI-augmentation, ensuring the workforce utilises Generative AI to enhance productivity and maintain India's target of a 10% share of the global services market by 2047.

This industrial renaissance extends into the heart of India's manufacturing through SAMARTH 2.0. This modernised skilling ecosystem targets labour-intensive sectors like textiles, which contribute approximately 2% to the national GDP, by focusing on Technical Textiles and AI-driven smart manufacturing. Through SAMARTH 2.0, workers are trained to operate in 'Phygital' environments where AI optimises supply chains and predictive maintenance. This ensures that traditional artisans and industrial labourers remain central to the 'Make in India' vision, bridging the gap between centuries-old craftsmanship and 21st-century efficiency. Ultimately, the Budget treats AI not as a vertical sector but as a horizontal enabler, ensuring that India's demographic dividend matures into a 'Creative Dividend' capable of navigating the volatility of a post-AI global economy.

The Digital Intelligence Commons:
India's Strategic Shift to AI-DPI

This Budget marks a seminal moment in India's technological evolution, moving beyond digital connectivity to institutionalise 'Digital Intelligence' as a fundamental right of the enterprise. By introducing IndiaAI Mission 2.0, the government has steered toward a 'Sovereign AI Stack', effectively initiating the 'UPI-fication' of Intelligence. This strategy treats AI not as a proprietary luxury held by global tech giants, but as DPI, specifically designed to democratise high-end compute and algorithmic logic for the nation's 74.7 million MSMEs. At the core of this mission is the Common Digital Platform, a horizontal enabler that allows small businesses to bypass the 'Technical Debt' usually associated with AI adoption. Traditionally, AI integration required massive capex on data science teams and bespoke infrastructure, but the Budget dismantles this barrier by providing vetted, 'ready-to-use' AI solutions through a plug-and-play architecture. By standardising APIs for credit scoring, supply chain optimisation and predictive maintenance, the government is creating a modular ecosystem that allows a textile unit in Tirupur or a handicraft exporter in Jaipur to utilise sophisticated demand-forecasting models previously reserved for multinational corporations, thereby enhancing India's industrial competitiveness on a global scale.

The most critical intervention in the Budget is the classification of Compute as a Public Utility. By allocating funds to add 20,000 high-end GPUs to the national pool, bringing the total toward the

1,00,000 GPU target, India is actively preventing a 'Compute Divide' that could otherwise stifle localised innovation. This 'Public Cloud' model is strategically significant as it provides researchers and startups in Tier-2 and Tier-3 cities with the same processing power as those in Bengaluru, decentralising innovation while ensuring sovereign resilience. By hosting this compute within the National Informatics Centre (NIC) and domestic data centres, India ensures that sensitive industrial data and foundational models remain under national jurisdiction, shielding the economy from global supply chain volatilities or potential 'compute-sanctions'. Analytically, the 'AI-DPI' framework represents a shift from 'Data Wealth' to 'Intelligence Value'; while India successfully leveraged its data through the first wave of DPI like Aadhaar and UPI, the current Budget focuses on the processing of that data into actionable insights.

The success of this mission depends heavily on the seamless integration of the National Data Governance Framework Policy. For AI-DPI to function with the same frictionless efficiency as UPI, the data must be interoperable, anonymised and ethically sourced. The Budget's focus on the MANAV Vision, ensuring systems are Moral, Accountable, National, Accessible and Valid, provides the ethical guardrails necessary to ensure that this democratisation does not lead to

algorithmic bias or privacy erosion. Ultimately, the Union Budget 2026-27 does not merely fund AI; it re-architects the state's role as a facilitator of digital intelligence, building a 'Full-Stack Sovereign IP' that ensures the fruits of the AI revolution are distributed across the social fabric rather than concentrated in a few digital monoliths.

Foundational Autonomy: Architecting India's Sovereign AI Model Layer

The Budget marks a definitive transition from technological consumption to 'Foundational Autonomy', a state where India's digital growth is no longer a derivative of foreign innovation. In this Budget, the IndiaAI Mission is specifically allocated ₹1,000 crore to focus on the 'Foundation Model' pillar, which directly supports BharatGen and Sarvam AI. By prioritising the development of indigenous Large Language Models (LLMs) like BharatGen and Sarvam-105B, the government is actively challenging the dominance of 'Black Box' foreign systems and securing India's 'Intelligence Value' within its domestic borders. This strategic pivot, supported by the expanded IndiaAI Mission 2.0, treats foundational models as essential public infrastructure, ensuring that the algorithmic logic governing Indian society is rooted in its own diverse

linguistic and cultural data rather than being shaped by Western-centric biases.

A cornerstone of this mission is BharatGen, the world's first government-led initiative focused on creating multimodal AI tailored specifically to the Indian context. At the India AI Impact Summit 2026, this initiative unveiled Param2 17B, a Mixture-of-Experts (MoE) foundational model engineered to support 22 official Indian languages with unprecedented precision. Unlike foreign LLMs that often struggle with 'Hinglish' vernacular or regional syntax, Param2 has been trained on the Bharat Data Sagar, a curated, research-led repository drawn from trusted domestic sources. This ensures that public sector applications, such as the newly launched MahaGPT, can operate with a high degree of cultural nuance, effectively eliminating the hallucination risks that occur when foreign models attempt to interpret Indian administrative or legal complexities.

Complementing this public sector push is the rise of private-sector frontier intelligence, epitomised by the launch of Sarvam-105B. This 105-billion-parameter model was trained entirely from scratch using domestic compute infrastructure, signalling that India has moved past merely 'fine-tuning' existing foreign models. The strategic significance of Sarvam-105B

lies in its massive 1,28,000-token context window, which allows it to process exhaustive technical manuals or state-level legal filings in a single prompt. Its performance, which rivals global benchmarks such as DeepSeek-R1 while maintaining a smaller footprint, proves that intelligence sovereignty is a technical reality that allows Indian enterprises to run complex reasoning tasks without exporting sensitive data to overseas servers.

Analytically, the Budget's support for these models addresses the critical vulnerability of Structural Dependence. By providing a robust ₹1,000 crore allocation for the IndiaAI Mission, the government is funding a 'Compute-to-Model' pipeline that allows local innovators to utilise the national pool of GPUs at subsidised rates. This effectively decouples Indian AI from the pricing whims and policy shifts of foreign Big Tech. Ultimately, Budget 2026-27 ensures that India's data remains a national asset, transforming the country from a global digital back-office into a net exporter of specialised, sovereign AI solutions.

The Anusandhan Catalyst: Engineering India's Leap into Sovereign AI and Scientific Discovery

The Union Budget 2026-27 has effectively transitioned the Anusandhan National Research

Foundation (ANRF) from a conceptual legislative framework into the operational central nervous system of India's innovation economy. By fully activating the ANRF, the government has moved to consolidate the nation's fragmented research landscape, creating a unified apex body that bridges the historical gap between academic labs and industrial production. This structural transformation is fundamentally underpinned by a shift toward mission-oriented research, designed to elevate India's Gross Expenditure on R&D (GERD) to a globally competitive level. Central to this strategy is a unique financial architecture where the central government provides a ₹14,000 crore base, strategically designed to 'crowd-in' an additional ₹36,000 crore from private and philanthropic sectors. To provide the necessary financial fuel for scaling these innovations, the Budget has integrated the ANRF with the ₹1 lakh crore Research, Development and Innovation (RDI) Fund, offering long-term 'patient capital' to deep-tech startups. The most radical aspect of this 2026 mandate is the institutionalisation of AI as a foundational accelerator for all scientific inquiry through the AI for Science and Engineering (AI-SE) mission. This flagship initiative, executed in collaboration with MeitY, moves beyond generic machine learning to prioritise the development of Physics-Informed Neural Networks and domain-specific foundation foundation models that natively understand scientific laws. By providing researchers with access to the Open IndiaAI Stack, the government is offering a 'LEGO-style' catalogue of sovereign data and models, supported by massive subsidies for GPU-as-a-Service compute hours. This ensures that breakthroughs in high-stakes verticals, such as climate modeling, semiconductor design and advanced biomanufacturing, occur at 'machine speed' rather than the traditional human-scale timelines.

This pursuit of scientific excellence is balanced by a robust commitment to democratisation. Through the Partnerships for Accelerated Innovation and Research (PAIR) programme, the ANRF is aggressively pairing top-tier mentors from elite IITs with researchers in emerging state universities to ensure that high-end innovation is not concentrated in a few urban hubs. Simultaneously, the Mission for Advancement in High-impact Areas (MAHA), encompassing MedTech and critical raw materials, is deploying AI-enabled robotics and predictive platforms to systematically reduce India's import dependencies. By aligning these diverse research streams under a single 'Sovereign IP' framework, this Budget has successfully repositioned India as an architect of original intellectual property, transforming raw 'data wealth' into durable 'intelligence value' for the 21st century.

Filtered Findings

The Algorithmic Plate:
Decoding the Union Budget 2026-27 for AI-Driven Food Safety and Economic Sovereignty

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Abstract

The Union Budget 2026-27 positions the IndiaAI Mission as horizontal infrastructure critical to India's economic sovereignty. While the spotlight often falls on fintech and manufacturing, the implications for the food safety ecosystem - valued at $400 billion - are profound. This article analyses the budgetary transition from foundational digital infrastructure to sector-specific AI applications. Drawing on recent FSSAI datasets and economic impact, it argues that integrating AI into food regulatory frameworks will address information asymmetry-related market failures and reduce the $15 billion annual economic burden of unsafe food. By leveraging the budget's focus on 'Data Stays Home' and indigenous full-stack IP, India is poised to create a global benchmark for AI-governed food safety.

The Budgetary Pivot to Intelligence

The Union Budget 2026-27 has been rightly characterized as a manifesto for a 'Future-Ready India'. By positioning the IndiaAI Mission as a key enabler for economic infrastructure, the Finance Minister has signaled a decisive departure from generic digitisation toward intelligent, autonomous governance. For the FSSAI, this budgetary direction is a clarion call to modernise a system that oversees 1.4 billion consumers.

The economic context is stark. Unsafe and unhealthy food costs India through healthcare expenditures and lost productivity. Traditional regulatory approaches, characterised by manual inspections and reactive sampling, suffer from diminishing marginal returns as supply chain complexity increases. This article explores how the 2026-27 allocations
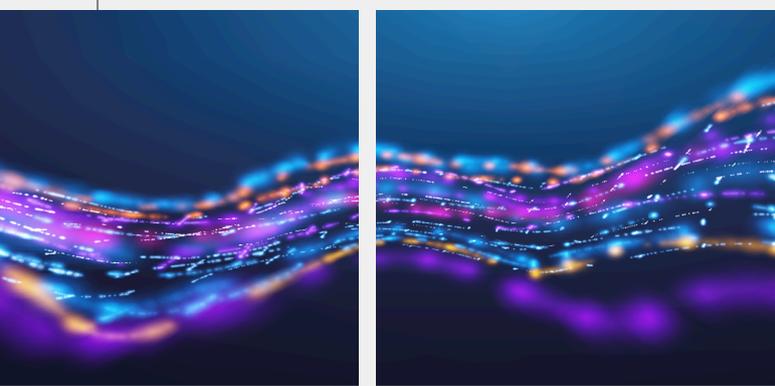
may inspire a transition from reactive enforcement to predictive risk management, leveraging India's Digital Public Infrastructure (DPI) to address systemic market failures.

Correcting Information Asymmetry

In economic terms, the food market is plagued by severe information asymmetry-consumers cannot easily verify the safety of what they eat, leading to a 'trust premium' where safety becomes a luxury good rather than a baseline guarantee.

AI offers a mechanism to democratise this verification. The Budget's allocation toward the India Semiconductor Mission (ISM) 2.0 significantly reduces the cost of deployment for IoT sensors and edge-computing devices. A domestic semiconductor ecosystem lowers the barrier for deploying smart sensors in cold chains, directly reducing post-harvest losses and mitigating the "lemons problem" in agricultural markets.

Furthermore, the scale of India's food system renders manual oversight historically inefficient. FSSAI along with State FDAs, currently oversees more than 6 million registered food business operators (FBOs) and receives 15,000-20,000 license applications weekly. The administrative cost of manually processing this volume is prohibitive. AI-driven automation does not just improve speed; it enhances allocative efficiency, ensuring that scarce inspection resources are directed toward high-risk entities rather than compliant ones.

From Digital Bedrock to Algorithmic Intelligence

India's readiness for this AI transition is grounded in a decade of building Digital Public Infrastructure (DPI). We are not starting from scratch; we are pivoting from digitisation (recording data) to intelligence (predicting risks).

The Data Foundation

Current datasets provide the "fuel" for the AI models envisaged in the Budget.

FoSCoS (Licensing): Has recorded approximately 1.3 crore visitors since inception, providing a rich repository of compliance history.

INFoLNET (Labs): Connects stakeholders for uniform testing, with more than 2 lakh visitors annually, creating a baseline for contamination patterns.

Social Sentiment: The 'Eat Right India' initiative has generated significant digital engagement, with hashtags like #EatRightIndia gathering around 500 specific
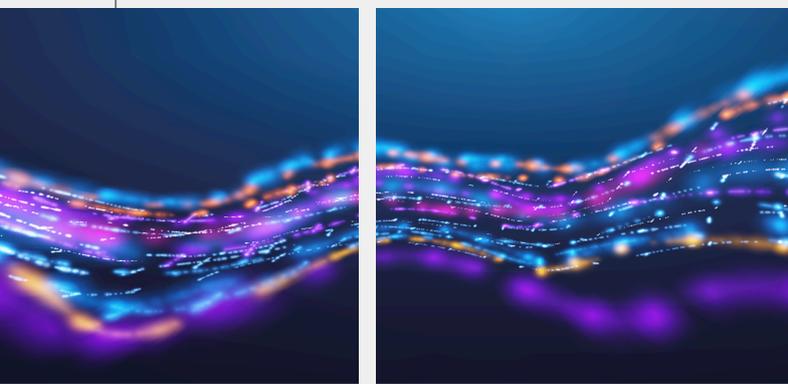
mentions and massive following serving as a proxy for consumer behavioral data.

Operationalising Intelligence: The Next Frontier

While much of the sector's AI transformation remains visionary, FSSAI is actively pursuing the integration of algorithmic intelligence into governance in three specific, high-impact areas:

AI-Enhanced Policy Framing: The National Stakeholders Consultation Portal, launched in April 2025, is poised for a significant upgrade. With nearly 5 lakh visitors already engaging with the platform, the volume of feedback on draft regulations creates a data processing challenge. We envision deploying an AI backend to analyze unstructured feedback from industry, academia, and the public. By using Natural Language Processing (NLP) to categorize comments, identify consensus areas, and flag substantive technical objections, we aim to drastically reduce the time between consultation and notification. This ensures that economic policy is responsive to the 'wisdom of the crowd', aligning India's standard-setting process with global best practices of regulatory coherence.

Predictive Trade Surveillance & RMS: The Food Import Rejection Alert (FIRA) portal has tracked over 21,829 interactions since its 2024 launch. We plan to integrate AI models to scan this global trade data alongside our existing Risk Management System (RMS). By correlating global rejection trends with domestic import declarations, the enhanced RMS could predict the dumping of substandard produce. This would allow for targeted, risk-based checks at ports, effectively serving as an intelligent non-tariff barrier against unsafe imports while facilitating the swift clearance of compliant goods.

Behavioral Change through Generative AI: The Eat Right India campaign aims to leverage the creative potential of Generative AI. To address India's linguistic diversity, we intend to deploy AI- based creative tools to generate hyper-localized content - from recipes to safety guidelines - in multiple regional languages. This would allow us to scale behavioral change

communication at a fraction of traditional media costs, addressing the demand side of food safety by creating an informed citizenry.

The 'Data Stays Home' Doctrine

The Union Budget 2026-27 places heavy emphasis on 'Data Stays Home: The case for A.I. sovereignty'. Food consumption data is bio-data. It is intrinsically linked to the genomic and metabolic profiles of the population. Relying on Western datasets for nutritional AI models often leads to erroneous guidelines that do not reflect the Indian dietary context. By localising data storage within secure Indian data centres, FSSAI aims to build the "Eat Right India Digital Stack." This ensures that the value derived from Indian food consumption data is captured domestically, reinforcing "nutritional sovereignty".

Comparative Governance

India's approach to AI governance in food safety seeks a strategic 'middle path', balancing the European Union's precautionary stringency with the United States' innovation-first flexibility. While the EU's AI Act classifies food safety AI as 'high-risk' with mandatory pre-market conformity assessments, and the US FDA leans on flexible guidance and voluntary pilots, India is carving out a distinct framework guided by the Seven Sutras of the India AI Governance Guidelines (2025). This indigenous model emphasises 'Safety and Reliability" alongside 'Inclusivity', aiming to operationalise a risk-based categorisation and graded compliance burden to foster innovation.

Challenges and The Way Forward

Transitioning to an AI-driven regime is not without structural friction.

The 'Black Box' Problem: Regulatory decisions, such as seizing a shipment based on an algorithmic flag, must be legally defensible. The lack of interpretability in deep learning models poses a due process challenge. FSSAI aims to develop an 'explainable AI' protocols to ensure that every algorithmic decision is accompanied by a human-readable rationale.

The Digital Divide: With millions of small-scale operators, there is a risk that AI compliance tools could become an entry barrier. To mitigate this, the Budget's 'Inclusive Growth'

theme supports the deployment of conversational AI bots in regional languages, effectively democratizing access to regulatory guidance.

Conclusion: Vision 2047

The Union Budget 2026-27 provides the fiscal and policy runway to transform FSSAI from a standards regulator to a data regulator. By integrating AI into the heart of governance, we can correct historical market failures and position India as a global leader in technology-enabled food safety. As we march toward Viksit Bharat 2047, the convergence of economic policy, artificial intelligence, and public health will define our growth story. We are moving towards a future where 'Safe Food for All' is guaranteed not just by law, but by code.

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From Data Generation to Data Control: India's Digital Sovereignty Challenge

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If you think about the last time, you downloaded an app or signed up for a website, you may have seen a pop-up appear, where amidst the dense, technical jargon waits a single button "I agree". Many of us press it, without any reconsideration. This one second reflexive click is the quietest surrender of our time. We are unbothered about where this data would go, who would own it but years later this could be determining a loan application, job or end up exposed in a breach exposing a person's Aadhar number, a privacy scandal or even an AI trained on one's face without his consent. This cannot always be attributed to user negligence, but it is the structurally opaque algorithm which is designed this way on purpose.

The Union Budget, 2026 stated that Indians generate 20% of the world's data: meaning 1/5th of all digital information produced globally comes from this country, however the unfortunate fact is that it hosts only 2-3% of global data centre capacity(The Financial Express,2026). Therefore, an estimated 90-95% of data is being processed outside the country. This isn't connectivity but this is extraction also named as data colonialism.

Table 1 shows that when adjusted for population, India's data centre footprint is not just smaller in absolute terms but dramatically thinner at the citizen level than that of China, Europe, or the United States.

Table 1: Data Centre Infrastructure: Absolute and Population-Adjusted Comparisons

COUNTRY	DATA CENTRES	POPULATION (APPROX.)	DATA CENTRES PER 100 MILLION
INDIA	153	1.43 billion	10.6993
US	5,427	333 million	1629.73
UK	523	67 million	780.597
GERMANY	529	84 million	629.7619
CHINA	449	1.41 billion	31.84397

Source: Cloudscene Global Data Center Directory(2025): World Bank Population Estimates

Colonialism legacy lives on; 150 years ago, it was about the colonial powers extracting physical resources from India and selling back the finished goods at a higher rate: the wealth was accumulating elsewhere. Today these resources have transformed into data, server farms and AI models and the direction of flow is exactly the same. Before diving into the infrastructure India is building, we must focus on why sovereignty matters to ordinary citizens. Think about the last time you spoke about buying something over a call, or a voice note and then saw ads for exactly that product everywhere you looked. For most of us, this is a daily experience. According to surveys conducted, 67% of Indian smartphone users reported seeing advertisements that appeared to be directly linked to their private voice conversations. Many users felt that the timing of these ads were too perfect to be a coincidence (Kroger and Raschke, 2019).

When Facebook launched the Free Basics program across Global South to provide free of cost access to Internet to economically disadvantaged countries, it received a heavy backlash. This was because it could not give clarity on data privacy and this costed metadata, user behaviour and patterns of millions of lives. More recently, in January 2026, Everest ransomware gang stole 861GB data from McDonald's India, that included customer's name and contact information. This breach exposed millions of customers to identify theft and scamming who already knew the names and purchase history and were capable of crafting messages nearly impossible to spot.

India is no longer content to be a data colony. The Union Budget marks a clear break from the past. Instead of focusing on rules about where data should be stored, it now focuses on investing in the physical and technological foundations of AI. So instead of controlling data flows, India's focus now lies on building the capacity to create, train and run intelligent systems at home. This transformation is visible in market data. India's data centre market is valued at approximately 10.1 billion in 2025 and is projected to exceed USD 25 billion by the early 2030s at a compound annual rate of 16.34% (Research and Markets, 2025). The projected jump in the IT load capacity is striking, from 4.48 thousand megawatts in 2025 to 12.47 thousand megawatts by 2030. This shows a strategic shift reflecting confidence that policy support will remain stable over decades, not just electoral cycles

In research and policy literature, digital or AI sovereignty does not mean technological isolation or withdrawal from global collaboration, rather it refers to a country's capacity to control , regulate and rely on its

Idigital infrastructure and AI systems without excessive dependence on external actors (OECD,2023; Farell & Newman, 2019). When these capabilities reside outside your government's territory, they are difficult to regulate, guarantee service to citizens, or contain in a crisis.

First, core public services and aspects of national economies run on AI and cloud technology. From banks, payment networks to medical records and emergency services, to elements of public administration, all are enabled by, and at risk of being disrupted if they are dependent on AI platforms not residing domestically (World Economic Forum, 2024; OECD, 2023). Analysis shows that when essential sources of economic activity are susceptible to outside control or foreign governments, it creates national exposures to dysfunction during an outage, legal confusion, or geopolitical conflict.

Second, government authority dissipates without sovereignty over infrastructure. Even if you enact robust privacy or AI regulations, they may not apply to data stored or compute provisioned elsewhere. Studies on digital sovereignty have found that sovereignty over legal approaches effectively evaporates when the underlying infrastructure is foreign-owned or located (OECD, 2023; He & Zeng, 2025).

Third, wealth accumulates where

infrastructure is located. AI requires large investments in equipment and data centres as well as specialised labour. Nations that attract and own this capital receive a larger share of the jobs and knowledge spillovers created by AI than those that consume services digitally (McKinsey Global Institute, 2023; IMF, 2024).

Finally, national security depends on it. Machine intelligence supports military logistics, intelligence analysis, policing, and emergency relief. Evidence of growing global interdependence has demonstrated that when your country's security comes to rely on digital infrastructure that's foreign owned or located, you incur strategic vulnerabilities, even if those countries are not enemies (Brookings Institution, 2024).

Diverse geographical areas have taken different stances on AI sovereignty. The European Union has prioritized the establishment of regulations. Tools like the Artificial Intelligence Act and the General Data Protection Regulation place a strong emphasis on risk management, privacy and transparency. Although this improves protections for citizens, policy studies point out that in order to stay competitive, regulatory leadership needs to be combined with increased domestic AI and computing power (Maxwell and Gornet, 2024).

China has adopted a state-led approach, making artificial intelligence a top national goal. The implementation of AI in the country has been driven by significant public investments, stringent data restrictions, and industrial strategy.

Global evaluations, however, draw attention to issues with civil freedoms, monitoring, and the consolidation of governmental power (IMF, 2024). The United States depends on innovation-driven sovereignty. Public financing for research, robust intellectual property protection, and private-sector leadership have put US companies at the forefront of worldwide AI development. While this has fueled innovation, it has also consolidated key infrastructure in a limited number of firms (Nourhan Ibrahim, 2025).

The delicate balance between individual rights, collective claims, and economic strategy is a fundamental issue that spreads through India's data governance structure. This tension is brought to light by Sinha and Basu (2021) in their examination of 'community data'. They assert that Indian policy frameworks do not adequately define what a 'community' is or how its demands should be balanced against individual autonomy, despite the fact that the phrase strives to acknowledge group interests. They highlight that decisional autonomy is the foundation of privacy law, i.e., when conflicts emerge, individual rights must prevail, drawing on constitutional privacy jurisprudence.

This tension has been aggravated by the delayed operationalisation of the Digital Personal Data Protection (DPDP) Act. Nearly two years passed between presidential assent and implementation, leaving citizens exposed during a regulatory vacuum. Even after notification, experts note that many firms treat compliance as a box-ticking exercise rather than the deep operational change meaningful data protection requires. The incomplete constitution of the Data Protection Board further weakens enforcement credibility.

India's Data Empowerment and Protection Architecture (DEPA) offer genuine technical progress through consent managers that allow detailed and revocable data sharing. However, academics note that DEPA is not a framework for citizen rights but rather a market-enabling infrastructure. Consent managers are private companies that prioritise financial efficiency over personal growth. On a deeper level, Watson (2015) cautions that popular metaphors like 'data is the new oil' promote an extractive, technocratic approach to data. She argues in favour of embodied metaphors, like DNA or fingerprints, that highlight the human origins of data and claims that data is made by, and about people.

The Union Budget's 22-year tax break for international data centre operators brings these issues into stark relief. While the policy aims to attract large-scale investment, it applies only to foreign firms, leaving Indian companies running identical infrastructure taxed at 25–30%. The Bharat Digital Infrastructure Association cautions that this could reduce domestic firms to low-margin intermediaries, while high-value ownership remains offshore (Bhatt, BDIA). The contradiction is clear. If data is a sovereign asset, location alone is not enough, ownership matters. India must decide whether its data infrastructure will ultimately serve its citizens, or merely replace one set of external dependencies with another.

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Research Roast

AI-driven Market Manipulation and Fiscal Stability:
Why Must Budget 2026 Strengthen SEBI's Digital Enforcement?

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In an age of generative AI, financial markets face novel threats. Deepfakes i.e. synthetic videos or audio mimicking real people have begun appearing in India's markets (Smith & Mansted, 2020). For example, the National Stock Exchange (NSE) recently warned investors about a fraudulent 'deepfake' video of its CEO giving bogus stock tips (The Times of India, 2024). Similarly, BSE Limited cautioned that an AI-generated video featuring its MD/CEO Mr. S. Ramamurthy 'offers stock market tips' and urged investors to ignore it (BSE, 2026). As NSE noted, 'deepfakes involve digitally altering the face of a person so that they appear to be someone else using a form of AI, and are typically used maliciously' (The Times of India, 2024). These incidents along with finfluencers using celebrity images show how AI-driven misinformation can distort market narratives almost instantly.

Such synthetic content can jolt markets. Even innocuous AI-generated rumors, like fake news of bank closures or false earnings announcements, can trigger herd behavior and flash crashes. As U.S. Securities and Exchange Commission (SEC) official Frank Martinez warned, unchecked AI fraud risks a 'targeted erosion of confidence' and even a single deepfake image (e.g. of a Pentagon explosion) caused a real stock market dip (Carpenter, 2025). India's markets are rapidly scaling; market capitalisation has more than quadrupled in ten years to over ₹4.7 lakh crore (around 138% of GDP), with individual investors now owning 21% of listed equity (The Economics Times, 2026). In such a context, a viral AI fraud could spook millions of new investors, amplify volatility and impose real costs on the economy.

Budget 2026-27: Growth Engine, Enforcement Afterthought

The Union Budget 2026–27 emphasises AI and digital growth, but largely as growth drivers. Total government expenditure is pegged at ₹53.47 lakh crore (Budget 2026-27), of which capital expenditure is ₹12.21
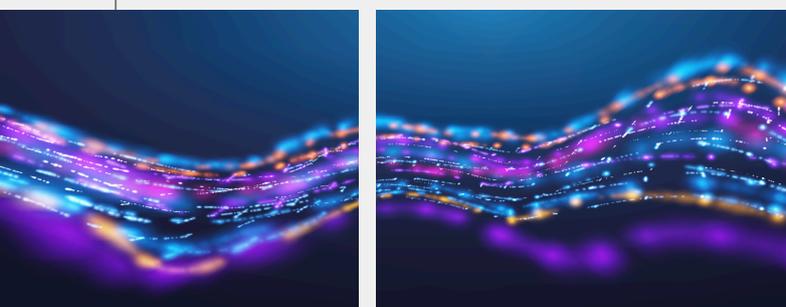
lakh crore. ('Effective' capex including grants is even higher, ₹17.14 lakh crore.) (Ministry of Finance, 2026). The finance minister boosted infrastructure, for example, ₹24,000 crore is earmarked for telecom infrastructure under central schemes. The government cut taxes, expanded digital connectivity (5G rollout), and launched the IndiaAI Mission to develop sovereign AI capabilities (Ministry of Finance, 2026).

However, the Budget's enforcement and oversight side is comparatively lean. The Finance Ministry's own budget is slashed, only ₹20,649 crore in 2026-27, down from ₹1.12 lakh crore (revised) last year. Critically, funding for regulatory bodies or digital enforcement is not clearly increased. Notably, the flagship IndiaAI Mission allocation is halved from ₹2,000 crore (BE 2025-26) to just ₹1,000 crore (BE 2026-27) (Ministry of Finance, 2026) (The Economic Times, 2026) even as AI risks grow. In short, Budget 2026 proclaims 'AI as growth catalyst' but does not similarly bolster RegTech or enforcement budgets.

Emerging Threats to Market Integrity
With AI-powered misinformation, the traditional fraud model breaks down. Longstanding SEBI regulations

assume human fraudsters and paper trails. But deepfakes and algorithmic misinformation operate at machine speed and scale. A single actor (or a foreign bad actor) can generate hundreds of convincing fake announcements or analyst calls and flood them across social media and chat apps. This 'synthetic market manipulation' can micro-target a stock or create false trading signals. Retail investors are now central to India's equity story and may react before regulators even spot the attack (The Economics Times, 2026).

Moreover, advanced AI can weaponise corporate narratives. For example, using voice cloning to issue phony exchange filings or reverse-acted WhatsApp calls with insiders, attackers could inflate or crash a stock in seconds. As Financial Industry Regulatory Authority (FINRA) and SEC officials note, market regulators must grapple with both sides of AI, leveraging it for surveillance and guarding against its misuse (The Economics Times, 2026) (Witkowski, 2024).

SEBI's own consultation paper (June 2025) explicitly acknowledged that generative AI could fabricate fraudulent financial statements or
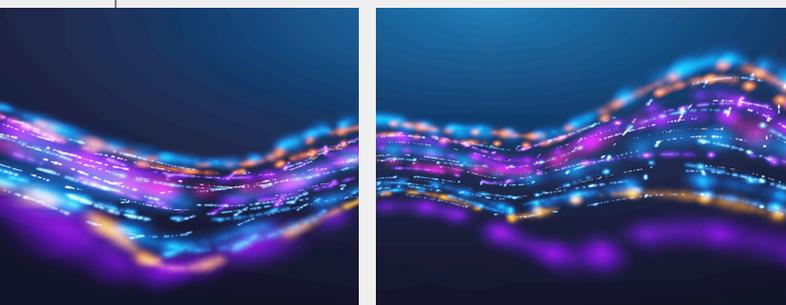
deepfake content 'which may potentially lead to price manipulation or market instability' (Chakraborty et. al, 2025). Despite the risk, SEBI's current toolkit remains largely reactive. Investigations often rely on trades/communications that can be falsified by AI. Traditional pump-and-dump crackdowns need physical perpetrators; deepfake schemes can be anonymous or overseas. Even watermarking or forensic analysis takes time. In short, evolving digital threats risk outrunning existing enforcement. As SEC Commissioner Hester Peirce warned, without active regulatory support, industry adoption of AI-specific fraud detection will 'lag behind evolving threats' (Carpenter, 2025).

Regulatory Gaps and Budget Blindspots

Budget 2026 unfortunately offers no explicit remedy. There is no new allocation for a 'Digital Enforcement Fund' or expanded SEBI tech staff. In fact, overall spending cuts may squeeze agencies such as the Education, IT, and even Finance budgets see flat or reduced real outlays. eanwhile, ambitious initiatives for AI (like the IndiaAI Mission, India Semiconductor Mission etc.) focus on R&D and industry, not oversight. Some indirect clues emerge like SEBI's tech plans (outside the budget) rely on its own reserves or nominee funds. During the Global Fintech Fest 2025, SEBI officials noted that their in-house analytics lab already uses AI/ML to

detect complex fraud patterns (Patwardhan, 2025). But building and maintaining those systems requires resources (data, servers, experts). In contrast to this, telecom or IT ministries which get tens of thousands of crores for digital projects (Ministry of Finance, 2026). SEBI's share is tiny by comparison.

Moreover, key cooperative frameworks are under-resourced. Indian Computer Emergency Response Team (CERT-In) and the Reserve Bank's cyber teams get only modest funding in the Budget.

Yet, deepfake scams often straddle financial, tech and social media domains, requiring fast coordination. A well-funded SEBI-CERT joint task force with AI labs could screen viral videos and posts in real time. But no such initiative is spelled out or funded in the FY2026-27 Estimates.

Fiscal Imperatives: Market Stability as Macroeconomic Stability

Why should the Finance Ministry care about such granular tech threats? Because market integrity feeds fiscal health. India's debt and deficit targets hinge on investor confidence. A sudden market panic or loss of trust could raise the risk premium on Indian government bonds, increasing borrowing costs. That would directly worsen the budget deficit. In Budget

2026, the fiscal deficit is pegged at 4.3% of GDP (Ministry of Finance, 2026), a hard-earned milestone under the Fiscal Responsibility and Budget Management (FRBM) Act. But a destabilised market could jeopardise that path. Consider the chain: An AI-driven stock flash crash or scam Retail wealth losses Consumer confidence dips Slower economic activity Lower tax revenues Higher deficits. Moreover, foreign portfolio investors (FPIs) are especially sensitive to market crime rates. If reports proliferate of unchecked digital fraud, FPIs may demand higher yields on sovereign bonds to offset perceived risk. The indirect cost could easily amount to thousands of crores extra interest payments.

In effect, funding digital enforcement is not a discretionary regulatory expense, it's macroeconomic insurance. The SEC has similarly cautioned that countermeasures to AI deception need regulatory backing lest fraud detection lag behind (Carpenter, 2025). By that logic, modest investments in surveillance tech today could avert much larger fiscal shocks tomorrow.

Global Eyes on Deepfake Regulations

This challenge is universal. In the US, both the SEC and FINRA publicly warn about deepfakes even as they deploy AI internally (Witkowski, 2024). SEC speeches highlight how synthetic media can quickly destabilise markets and undermine

trust ('The Liar's Dividend')(Carpenter, 2025). Global regulators are beginning pilot AI surveillance: for example, Singapore's MAS has funded projects on AI fraud detection (Monetary Authority of Singapore, 2024), and the EU's Markets in Crypto-Assets (MiCA) regulation will require crypto firms to tackle deepfakes.

Some countries explicitly allocate funds. For instance, India's announcement of an AI mission was paired in Budget 2020 with ₹10 billion (₹1,000 crore) for a national AI lab (Ministry of Finance, 2026), though SEBI's needs were not similarly met. In contrast, the U.S. SEC's technology budget (within the Treasury) is on the order of tens of millions of dollars annually, explicitly to upgrade surveillance systems.

Any analysis must note that India's SEBI, although small by global standards, is overseeing an outsized market, clearly implying a need for proportionate investment.

Policy Prescription: Funding SEBI's AI Enforcement

To bridge this gap, Budget 2026-27 should earmark dedicated funds for 'AI-driven market integrity'. Key proposals include:

- Digital Market Integrity Fund (DMIF): Allocate about ₹1,000-1,500 crore (capex) for SEBI over 5 years, earmarked for developing AI/ML surveillance platforms. This could be modeled as a capital fund (similar to Telecom infra). It would cover hardware, data (e.g., satellite monitoring of stock exchange premises), and specialised staff.
- SEBI-CERT AI Lab: Jointly fund a centre of excellence (₹100-200 cr) for real-time analysis of suspicious media and communications. CERT-CERT-In's cyber intelligence and SEBI's surveillance data could be fused using AI to flag deepfakes.
- Algorithmic Audit & Research Grants: Provide grants (₹100-200 cr) to academic and private labs for research on deepfake detection, synthetic media forensics, and AI market abuse detection. These should be awarded on deliverables (models, tools, datasets).
- Mandatory AI Disclosures: Budget to cover SEBI rulemaking costs for new disclosure norms. For example, requiring listed firms to report any use of AI in press releases or earnings calls with the expectation that SEBI spot-checks with penalties for violations. (Even moderate fines on violators can be revenue-positive for the regulator.)

Each of these points could be part of the capital expenditure plan, aligning with the Budget's focus on capex as

investment in institutions. They would ideally be supported by multi-year funding (say, a 2-year plan) to ensure continuity beyond annual budgets. The total scale is small relative to broader capex (₹12.21 lakh crore), but would signal seriousness.

Why capital spending? Treating enforcement tech as capital underscores it as an 'asset' infrastructure of market integrity). It also fits FRBM rules (most R&D/surveillance projects can be capex). A one-time corpus prevents such funding from being cut in year-end crunches.

Conclusion

In sum, growth without guardrails is fragile. While Budget 2026-27 positions AI as a growth catalyst through infrastructure and sectoral integration, it does not proportionately invest in regulatory digital enforcement. In an era of AI-generated misinformation and deepfake-enabled market manipulation, underfunded surveillance architecture poses systemic risks to market integrity, investor savings, capital inflows, and ultimately fiscal stability. Strengthening SEBI's AI-based enforcement capacity is therefore not a regulatory luxury but a macroeconomic necessity.

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Guest Blends

From Digital India to AI India:
Budget, Summit and India's Deep Tech Moment in a Fragmented World

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If India's first digital transformation was about access, the next will be about intelligence. Earlier one benefitted from leveraging western technologies, cheaper internet, large young population, open-source digital infrastructure and their utilisation by innovative start-ups. The next transformation of AI will gain from existing DPIs, data infrastructure and large Indian datasets but more importantly will require ground-breaking technological advancements and multistakeholder led faster development and adaption. Two important events of this February, Budget 2026 and India AI Impact summit signals India's AI aspirations.

From Digital Rails to Cognitive Infrastructure

Over the last decade and more, India's digital transformation has been built on a set of public digital rails designed very differently from the closed, platform-led models associated with Silicon Valley. Instead of allowing a few private firms to control identity, payments and data flows, India created interoperable infrastructure that any company or start-up could plug into.

Aadhaar provided a universal digital ID; Unified Payments Interface made real-time payments ubiquitous; e-KYC simplified verification; DigiLocker enabled secure document storage; the Account Aggregator framework introduced consent-based data sharing and Open Network for Digital Commerce is attempting to do for commerce what UPI did for payments. Together, these layers reduced transaction costs, expanded formal participation, ensured financial inclusion and allowed digital entrepreneurship to scale on shared public infrastructure rather than proprietary gatekeeping.

Budget 2026 and the recent AI Summit suggest that India is preparing for a second transition from digitisation to cognition; from platform access to model capability; from public digital infrastructure to intelligent infrastructure.

Budget 2026-27

The annual financial document reflects a calibrated but targeted approach to India's AI ambitions. The allocation of

₹1,000 crore to the IndiaAI Mission, lower than last year's ₹2,000 crore, signals a shift from headline expansion to execution discipline, particularly in light of underutilised funds (only ₹800 crore used). More structurally significant is the announcement of the high-level "Education to Employment and Enterprise" Standing Committee to assess AI's impact on jobs and skills while aligning education and enterprise strategy with the evolving services economy. Complementing this is the long-term tax incentives for data centres and cloud infrastructure, positioning compute capacity as strategic national infrastructure.

Finance Minister in her Budget speech projected AI, as "force multipliers for better governance." The ₹1 lakh-crore Research, Development and Innovation Fund, with ₹20,000 crore earmarked for FY26–27, further indicates a move toward catalysing deep-tech R&D in sectors such as agriculture, health and education.

Taken together, the Budget treats AI less as a start-up theme and more as an infrastructural layer of the economy. It prioritises compute, storage and public-sector applications, therefore laying the hardware and institutional foundations for a private-led AI cycle. While long-term infrastructure signals are strong,

Nations that have control over thesimmediate concerns like affordable compute access, regulatory clarity, early procurement pathways and predictable research grants remain only partially addressed. The Budget builds the runway, whether it enables rapid take-off for domestic AI builders will depend on how quickly institutional bottlenecks are resolved.

India AI Impact Summit

On the other hand the India AI Impact Summit 2026 in New Delhi marked a significant moment in global AI diplomacy. 86 nations and two international organisations endorsed the New Delhi Declaration on responsible and inclusive AI which became the largest multilateral consensus on AI governance to date. The summit also catalysed large-scale infrastructure and investment commitments, underscoring India's ambition to position itself as a hub for AI collaboration, human capital development and equitable technological diffusion.

For Indian stakeholders, it served as both a platform for showcasing domestic innovation and a signal that international cooperation rather than unilateral regulation will shape AI's developmental trajectory in the coming decade.

Placing India at the forefront of the Global South, The New Delhi Declaration affirms a global consensus on shaping AI as a tool for inclusive development. It advocates democratisation of AI resources, equitable distribution of AI's benefits, human-centric governance and international cooperation while respecting national sovereignty.

Beyond AI ethics and cross-border AI governance, AI Summit underscores India's conviction and coherent signalling to lead AI development in times to come. Such policy clarity and narrative building acts as a lighthouse for VCs, investors and sovereign funds along with innovators, start-ups, researchers and academia.

AI as a Structural Economic Force

The true development and leadership can only come from understanding the essence of it. Artificial intelligence must be understood not as a sectoral innovation, but as a structural economic force. AI is a wave which will lift all the ships across the ocean. In the framework of endogenous growth theory articulated by Paul Romer (1994), knowledge capital generates increasing returns and positive spillovers, raising productivity across the entire economy. AI accelerates the creation and application of ideas, thereby expanding the frontier of total factor productivity rather than merely adding incremental output.

Yet, its high fixed costs, scale economies and first-mover advantages also place it within the domain of strategic trade, where calibrated state intervention can shape long-term competitive positioning. Budgetary commitment to AI, therefore, represents capital deepening in the knowledge economy, not discretionary technology spending. DPI in India is a quasi-Public good. This can also be true for the AI ecosystem in India but only when AI becomes inclusive and focuses on 'welfare for all'.

AI as Sovereign Infrastructure

To frame AI merely as an innovation sector is to underestimate its macroeconomic implications. AI must be treated as sovereign infrastructure. Similar to how electricity powered manufacturing, telecommunications enabled services, DPI democratised access. AI infrastructure will determine productivity in agriculture, efficacy in public health, adaptive learning in education, climate & disaster management and readiness in defence systems and much more.

If compute capacity, foundational models and high-value datasets remain externally dependent, sovereignty becomes layered rather than complete. The geopolitical reality

is stark: firms such as NVIDIA dominate advanced compute supply, China controls strategic minerals, while entities like OpenAI shape frontier model development. Dependence at these layers constrains strategic autonomy.

In this context, public investment in AI is not technology patronage. It is state capacity building.

A Global Industrial Policy Moment

Globally, AI policy has moved from enthusiasm to industrial and geopolitical strategy. The United States, through the CHIPS and Science Act 2022 (a $280 billion bipartisan law for manufacturing, R&D and technology), has treated semiconductor and AI capability as instruments of national security and geopolitical leverage. Especially under Donald Trump, USA is making a new economic security and strategic push through AI. 'Pax Silica' initiative pushes for supply chain security of semiconductors, AI infrastructure, critical minerals, advanced manufacturing, logistics and associated energy and data infrastructure.

The United States has adopted a multi-layered AI strategy spanning research, infrastructure, exports, regulation and education. The Department of Energy's Genesis Mission links 17 national laboratories into a closed-loop AI experimentation platform, with 26 targeted challenges in areas such as energy grids, nuclear data and autonomous labs. An "Edge AI package" offers up to $200 million per manufacturer to scale affordable AI-enabled devices, while the American AI Exports Program integrates partner-country firms into U.S. tech stacks and deploys talent through the U.S. Tech Corps. Regulatory oversight is advancing alongside K–12 AI literacy initiatives led by the White House Task Force on AI Education.

On the other hand, China is aggressively positioning artificial intelligence as a central pillar of national strategy, aiming to achieve global AI leadership by 2030. Through initiatives such as "AI Plus" (2024–25), Beijing is embedding AI across manufacturing, infrastructure and public services in a coordinated, top-down manner. The strategy combines rapid deployment with strict regulatory oversight, including tight controls over data, security, content governance and mandatory watermarking. By 2035, China envisions AI integrated across nearly 90% of its economy, anchoring both economic modernisation and state capacity.

iIndia's approach appears hybrid. It combines infrastructure ambition with governance sensitivity yet operates under tighter fiscal constraints and developmental imperatives. The question is not whether India can replicate the US or EU or China models. It is whether it can craft a uniquely designed pathway: scalable, development-oriented and strategically autonomous.

Privately Financing the tide

International Data Corporation's research highlights that in 2030, every new dollar spent on business-related AI solutions and services will generate $4.60 into the global economy, in terms of indirect and induced effects.

However, due to its long gestation period, any investment in core development asks for appetite and patience. Between 2013 and 2024, global private AI investment was heavily concentrated in the US ($471bn; 6,956 start-ups), followed by China ($119bn; 1,605 start-ups), with India at only $11bn across 434 newly funded AI companies.

For financing these efforts in India, venture capital alone may be insufficient; blended finance, sovereign funds and mission-oriented procurement must play a role. At the same time, entrepreneurs must resist subsidy dependence.

State support can catalyse, but durable advantage will come from intellectual property, defensible research capability and integration into global value chains. Deep tech entrepreneurship in India will now be measured not by valuation velocity, but by technological depth and strategic relevance.

Entrepreneurial Imperative: From Application Layer to Foundational Capability

For India's deep tech founders, this policy moment changes the strategic calculus. For over a decade, the start-up ecosystem has thrived on application-layer innovation; fintech, SaaS, marketplaces; leveraging public digital infrastructure. AI India demands a more difficult pivot: from interface design to infrastructure creation. Sectoral AI applications in agriculture, health, education, defence, climate, rural development will be needed to boost the development as well as impact of India AI.

Building foundational models, domain-specific AI systems, semiconductor design tools or indigenous datasets requires longer capital cycles, higher technical depth and tolerance for delayed monetisation. Simply creating APIs based applications and utilising existing LLMs will not be able to fulfil India's AI dreams.

Challenges ahead

No industrial transition is frictionless and India's AI push faces structural constraints beyond budgetary announcements. Advanced AI talent remains limited, research funding is fragmented, grant cycles are slow and regulatory uncertainty creates hesitation for builders and investors. Continued brain drain further weakens domestic capability. Institutional economics reminds us that infrastructure alone does not create capacity; sustained progress requires coherence across funding, regulation, talent, and procurement systems.

From Adoption to Creation

India has proven its ability to scale digital adoption. The deeper challenge is to scale intelligence production. The transition from Digital India to AI India is not about software upgrades or summit diplomacy. It is about upgrading the technological ambition of the state and aligning fiscal design, institutional capacity and entrepreneurial energy. The question is no longer whether India will use AI. The real question is whether it will build it. And in doing so, redefine the contours of economic sovereignty in the knowledge century.

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Global Pour

Fiscal Architecture for Intelligent Mobility: Comparative insights from Singapore, Norway and the Netherlands for India's AI-Enabled Transport Transition

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Abstract

AI enabled transport systems are increasingly recognised as critical enablers of sustainable mobility transitions. However, technological sophistication alone does not guarantee systemic transformation. Emerging evidence from transport governance and sustainability transition suggests that fiscal architecture (the design, integration and continuity of public expenditure) determines whether intelligent transport systems (ITS) scale effectively. This article comparatively examines Singapore, Norway and the Netherlands to assess how integrated transport budgeting frameworks have embedded AI-driven mobility systems within climate-aligned infrastructure strategies. Drawing on literature and policy evidence, the article argues that sustained digital infrastructure investment, cross-sectoral coordination and performance-linked budgeting underpin successful intelligent mobility transitions. In contrast, India's fiscal allocations for AI and transport remain fragmented, constraining transformative potential. The article concludes with institutional design recommendations for embedding AI within India's transport expenditure framework.

Introduction

Transport is responsible for over a quarter of all CO_2 emissions connected to energy, making it one of the hardest sectors to decarbonise (International Energy Agency, 2025). Although electrification has been the main topic of policy discussions, current research shows that AI optimisation, modal integration, and demand management are just as important for making mobility changes more sustainable (Creutzig et al., 2020; Sovacool et al., 2021).

AI-enabled intelligent transport systems (ITS), predictive analytics, digital twins, and mobility-as-a-service (MaaS) platforms are progressively regarded as solutions to mitigate congestion, improve infrastructure efficiency, and expedite behavioral transitions (Milakis et al., 2017; Marsden & Docherty, 2013). However, studies in transport governance show that technical innovation does not grow without being built into institutions and getting sustained

financial backing (Docherty et al., 2018; Gössling, 2020).

Transition theory shows even more how the government may shape social and technical transformation through long-term investment plans and mission-driven governance (Mazzucato, 2018; Roberts et al., 2018). So, putting AI to use in transportation is really an issue of how to construct public finances.

This article contends that fiscal architecture, characterised by the incorporation of digital infrastructure financing into transportation planning, sustained multi-year budgeting, and performance criteria associated with climate objectives, is pivotal to the success of intelligent mobility transitions.

Fiscal Architecture and Intelligent Transport Systems

Comparative fiscal research shows that the size and structure of transportation investments have a big effect on decarbonisation paths. Recent data from the IEA and OECD infrastructure statistics reveal that leaders in advanced mobility spend about 1% of GDP each year on transportation infrastructure, with digital components built into the main spending plans.

Transport Investment as Share of GDP
Approximate recent benchmarks indicate:

Country	Annual Transport Investment (% GDP)	Digital Integration Level
Singapore	1.3-1.5%	Fully embedded within transport budget
Norway	1.1-1.4%	High (planning and operations integrated)
Netherlands	1.0-1.2%	High (multimodal digital integration)
India	0.6-0.8% (highway dominant)	Low to no AI integration

India's total spending on transportation is very high, but digital spending is still very low, making up less than 5% of all transportation spending. Most of this money goes through separate digital missions instead of being built into the transportation sector.

Research indicates that persistent capital allocation beyond 1% of GDP correlates with significant enhancements in infrastructure quality, modal integration, and decarbonisation capability (Marsden et al., 2020). It is very important that this expenditure works and that depends on both the amount of money spent and the way it is spent. For example, whether digital technologies are included in long-term transport planning.

The Financial Structure and Smart Transportation Systems

The sustainability effects of AI-powered transportation systems work through three proven ways:

(1) Optimising demand and managing traffic jams
Real-time traffic analytics and dynamic congestion pricing help ease congestion during peak hours, keep network flows steady, and cut down on emissions.

(2) How well infrastructure is used
Predictive modeling and digital twin technologies improve the placement of charging networks and lower the risk of misallocating funds. Data-driven planning can cut down on unnecessary charger installations by 10–20% (Nicholas & Hall, 2018) based on early EV infrastructure rollout.

(3) Integration of modes and a change in behavior
Mobility-as-a-Service (MaaS) platforms and integrated ticketing systems make public transportation more appealing and lower the cost of transactions. Research indicates that digital integration enhances public transport utilisation by 3-7%, especially in densely populated metropolitan areas (Pangbourne et al., 2020; Smith et al., 2022).

Nevertheless, evidence continually indicates that isolated digital pilots do not achieve scalability when limited by short-term financing cycles and institutional fragmentation (Docherty et al., 2018; Marsden et al., 2020). Transition theory makes it further clearer that consistent, mission-driven public investment is needed for socio-technical change, not experimental grant-based support (Mazzucato, 2018).

Because of this, fiscal architecture needs to see digital technologies (such AI traffic management, predictive maintenance, pricing optimisation, and multimodal platforms) as basic transport infrastructure instead of optional innovation costs. Evidence from many countries shows that when digital systems are included in regular construction budgets, work toward climate goals, and are kept up for several years, they lower congestion, make infrastructure more efficient, and cut down on emissions

Singapore: Algorithmic Demand Management and Centralised Fiscal Design

Singapore has one of the best institutionalised systems for AI-enabled mobility governance. The Smart Nation and Digital Government Office is in charge of the Smart Nation framework, which includes digital infrastructure in all areas of public administration. The Land Transport Authority (LTA) is a centralised government agency that handles both capital and operational budgets.

Pricing for Traffic and Real-Time Analytics
One of the first large-scale algorithmic demand-management systems is Singapore's Electronic Road Pricing (ERP) system. Research has shown that dynamic pricing greatly lowers

traffic levels and keeps peak-hour congestion stable (Olszewski & Xie, 2005; Phang & Toh, 2004). Recent modeling studies demonstrate that AI-enhanced congestion pricing enhances network efficiency and emission outcomes (Li et al., 2023).

Singapore funds ERP improvements by ongoing multi-year appropriations in transportation budgets, unlike places where digital trials are still on the fringes. This shows how important it is for smart transportation systems to have institutional continuity (Docherty et al., 2018).

Digital Infrastructure as a Key Asset
AI-powered predictive maintenance for trains, integrated ticket systems, and traffic optimisation platforms are all part of regular spending plans. This kind of integration lowers the costs of transactions and makes adaptive governance better (Gössling, 2020). Singapore shows how centralising taxes might help build up AI infrastructure while still meeting climate goals set out in its Green Plan 2030

Norway: Fiscal Incentives Coupled with Predictive Infrastructure Planning

People all across the world know that Norway has done a great job of electrifying its country. More than 95.9% of new automobile sales were

electric by 2025 (International Energy Agency, 2025). Nonetheless, studies underscore that fiscal incentives alone do not elucidate this shift (Figenbaum, 2017; Sovacool et al., 2021).

Stability of Long-Term Incentives
Norway's tax breaks on electric vehicles, VAT waivers, and infrastructure subsidies have been in place for more than ten years, which gives the program more legitimacy (Figenbaum, 2017). Stable budgetary commitments lower uncertainty, which is an important part of models for adopting new technologies (Roberts et al., 2018).

Planning with AI and Digital Twins
Recent studies show that using predictive modeling and digital twins can help with the best placement of charging infrastructure and its connection to the grid (Funke et al., 2019; Nicholas & Hall, 2018). These kinds of analytics make better use of infrastructure and save costs. Milakis et al. (2017) show that when long-term policy frameworks are used with automated and digital transport planning technologies, they may cut down on emissions from the whole system. Norway's style of running things shows how AI can make the government more efficient by making sure that electrification subsidies fit in with spatial planning and energy infrastructure.

The Netherlands: Multimodal Integration and Data-Driven Urban Mobility

The Netherlands uses a multimodal and geographically integrated method. The Ministry of Infrastructure and Water Management is in charge of multi-year infrastructure investments that include rail, cycling, electric vehicle infrastructure, and smart mobility innovation funding.

MaaS and Behavioral Integration
There has been a lot of research on Dutch MaaS experiments (Pangbourne et al., 2020; Smith et al., 2022). Evidence indicates that digital integration increases the appeal of public transportation and diminishes dependence on private automobiles.

Cycling and Smart Infrastructure
Digital safety analytics and linked traffic systems help keep the high number of people who ride bikes. Creutzig et al. (2020) contend that modal shift policies, when integrated with digital optimization, have more mitigation potential than electrification in isolation. The Netherlands shows that AI can help with sustainable urban planning when it is part of long-term financial commitments

India: Fragmentation and Capital Bias

India has increased funding for electrification programs and started the IndiaAI Mission. But institutional fragmentation is still a problem. According to Marsden et al. (2020), "infrastructure lock-in" means that transportation funds focus on expanding roads and the metro. AI financing goes through several digital innovation channels, which makes it harder for sectors to work together.

The fact that EV subsidies were not used enough in the past shows that there were gaps in coordination (NITI Aayog, 2022). If AI isn't included into the fundamental frameworks for spending on transportation, digital innovation might stay more of a symbol than a real change.

India: Gaps in Numbers

Getting people to use EVs

The International Energy Agency (IEA) says that less than 2% of all passenger automobile sales in India are electric vehicles. Uncertainty about incentives and weaknesses in infrastructure make elasticity less flexible.

The density of chargers

There are still less than one public charger per 100,000 people, which is a lot less than in Norway.

AI Budget Distribution

The IndiaAI Mission is a big digital investment, however integrating transportation across different sectors is still not very good. It is thought that digital transport allocation makes for less than 0.05% of GDP.

Policy Implications for India: Set Goals

India might think of the following based on comparisons:

1. Raising smart mobility allocation to at least 0.2–0.3% of GDP.
2. Setting a goal of 10 chargers per 100,000 people in five years.
3. Testing AI-based congestion pricing in big cities.
4. Tying incentives for electric vehicles to limits on infrastructure density.
5. Making it mandatory to use digital twins in Tier-1 cities.

Fiscal Architecture as a Transition Mechanism

Three structural ideas are supported by comparative evidence:

1. Long-term, mission-driven budgetary design allows for scalability (Mazzucato, 2018).
2. Digital infrastructure should be integrated into transportation ministries rather than existing as separate technology initiatives (Docherty et al., 2018).
3. Budgeting based on performance helps match with the climate (Creutzig et al., 2020).

India's problem is not its capacity to use technology, but its ability to integrate its finances.

Conclusion

Singapore, Norway and the Netherlands show that the way AI-enabled mobility changes happen is mostly determined by the way taxes are set up. Intelligent transport systems can grow and have quantifiable effects on sustainability thanks to ongoing public investment, collaboration across sectors, and budgeting that takes climate change into account.

The existing allocations in India show improvement, but they don't fit into the bigger picture. Integrating AI into transportation budgeting systems is necessary to speed up the process of decarbonisation and make urban mobility more sustainable.

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What's Up @NEF?

The NEF team had an opportunity to meet Shri Nripendra Mishra, IAS (retd), former Principal Secretary to the PM, to present our latest set of publications and to seek guidance upon paving the way for our shared collective vision of a Viksit Bharat @2047.
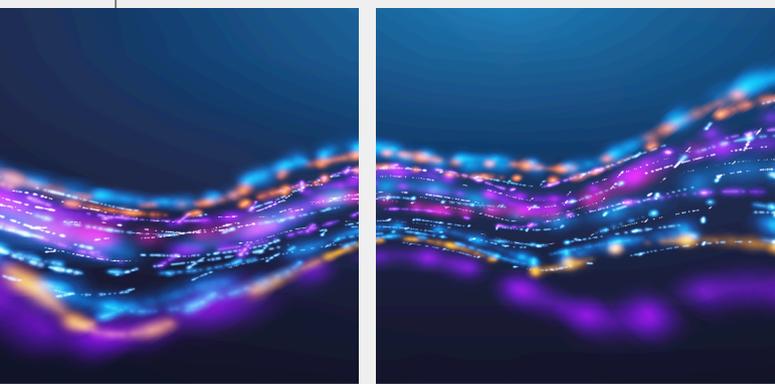
NEF engaged with Ms Charu Malhotra, Advisory Board Member, NEF, and Co-Founder & Managing Director of Primus Partners, for a strategic deep-dive on NEF's flagship initiative, Aarthik Samvaad. Fresh from the World Economic Forum Annual Meeting, Davos (January 2026), Ms. Malhotra brought a clear message: The Era of Agenda-setting without delivery is over. What the world now expects from policy institutions is credibility, clarity, and continuity.

The discussion centred on building *Aarthik Samvaad* not as a conference, but as an institution - India-anchored, globally informed and relentlessly outcome-oriented. A platform that converts economic dialogue into policy pathways, and conversations into sustained action.

Ms. Malhotra's insights and guidance will play a critical role as NEF moves from convening conversations to shaping outcomes.

The NEF team had the pleasure of meeting Shri Krishna Kishore Atmakuri and Shri Arjun Varma. The discussion reflected the entrepreneurial drive and patriotic spirit of Andhra Pradesh's young leadership, with an engaging brainstorming session on unlocking the untapped potential of the state, from its vibrant coastal towns to its promising hilly regions.
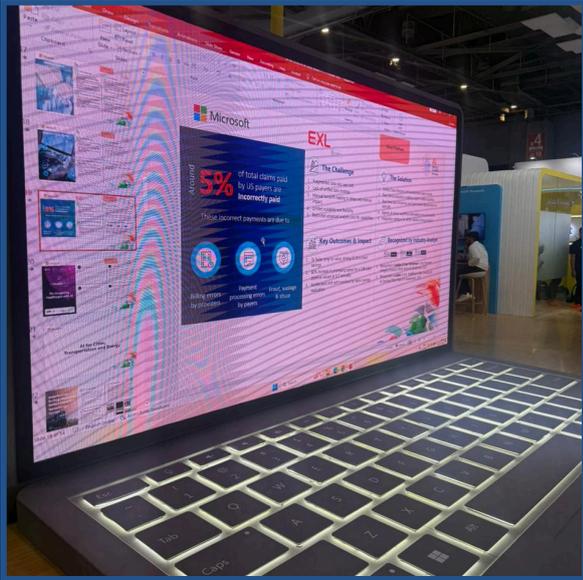
From high-level AI dialogues to breakthrough tech showcases, the NEF team covered the India AI Impact Summit 2026 with full gusto across Bharat Mandapam and Sushma Swaraj Bhawan, capturing India's drive to lead the global AI revolution.

Dr. Sagarika Chaudhary
Sr. Research Associate, N.E.F.

We are honoured to announce that Dr. Sagarika Chaudhary, Senior Research Associate, will be presenting a paper on '*Alternative Fuels For Decarbonising Freight Transport: A System Dynamics Approach'* at the Transport Research Arena 2026 (TRA 2026).

This academic gathering is Europe's largest and most prestigious conference on transport research and innovation organised every 2 years by the European Commission.
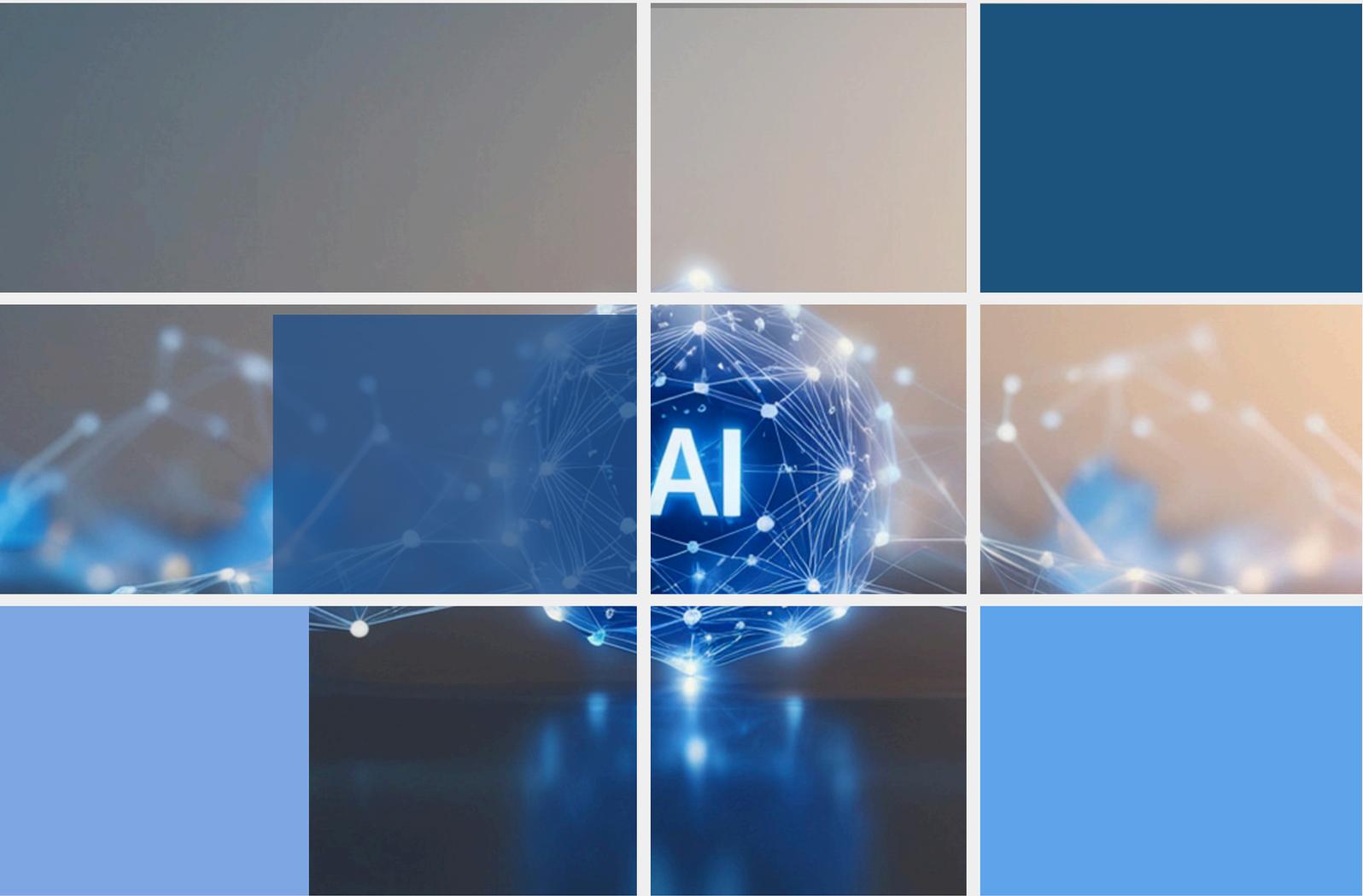
Dr. Sagarika Chaudhary, Senior Research Associate and Areeka Mir, Research Associate, participated in the 25th World Sustainable Development Summit, organised by TERI and MoEFCC in the national capital. This invite-only convening of policymakers, researchers and industry leaders featured rich deliberations on India's net-zero and Viksit Bharat ambitions, global climate outcomes, strategic policy pathways, AgriPV scale-up and more.

NEF team participated in Sashakt Nari, Viksit Bharat: Women-Led Development @ 2047, a national dialogue hosted by Chintan Research Foundation (CRF), spotlighting women-led development as a cornerstone of India's Viksit Bharat vision. The event brought together distinguished voices, including Annapurna Devi, Union Cabinet Minister for Women & Child Development, Dr. Priti Adani, Chairperson, Adani Foundation, and an inspiring cohort of accomplished women leaders from diverse fields.

Shri Devesh Tripathi, President, NEF, along with Shri Jagdip Rana, Executive Director, had the honour of welcoming Shri Manoj Kumar Singh, IAS, Chairman-cum-Managing Director of the Bihar State Power Holding Corporation Limited (BSPHCL), to the NEF office. The discussions spanned a wide spectrum of issues relating to electricity generation, distribution reforms, grid modernisation, and the broader energy transition landscape in Bihar.

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