



DIGITAL GOVERNANCE FOR A SUSTAINABLE FUTURE: AI'S ROLE IN INDIA'S ADMINISTRATIVE REFORM

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Abstract

India's administrative machinery is undergoing a structural shift as artificial intelligence (AI) tools are woven into service delivery, grievance redressal, and regulatory oversight. This paper examines how AI-enabled digital governance is reshaping the sustainability, efficiency, and inclusiveness of India's public administration. Drawing on official budget documents, the United Nations E-Government Survey, and recent parliamentary and institutional reports, the paper traces India's rise on global e-government benchmarks alongside the uneven financial execution of flagship programmes such as the IndiaAI Mission. It situates these developments within a sustainability framework, arguing that digital governance can only be considered sustainable when infrastructural gains are matched by human-capital investment, energy-conscious computing, and safeguards against algorithmic exclusion. The paper presents comparative data on India's E-Government Development Index trajectory and IndiaAI Mission fund utilisation, both of which reveal a persistent gap between policy ambition and delivery capacity. It concludes that sustainable administrative reform requires institutionalised AI governance guidelines, transparent fund utilisation, multilingual accessibility, and continuous capacity-building for civil servants, rather than reliance on infrastructure spending alone. The findings offer a framework for evaluating AI-driven governance reforms in large, federal, and linguistically diverse democracies beyond India.

Keywords: *Digital Governance, Artificial Intelligence, Administrative Reform, Sustainable Development, E-Government, Indiaai Mission, Public Administration, India.*

1. Introduction

The governance of a nation of over 1.4 billion people has always depended on the capacity of its administrative machinery to translate policy into service at scale. For decades, that machinery in India was defined by paper files, discretionary counters, and long queues at government offices. Over the past ten years, a parallel structure of digital public infrastructure — Aadhaar, the Unified Payments Interface (UPI), DigiLocker, and the Centralised Public Grievance Redress and Monitoring System (CPGRAMS) — has been layered onto this administrative base, and artificial intelligence is now being layered onto the digital structure in turn (Rao, M.K.P. 2018). Fraud detection in tax administration, multilingual chatbots for citizen helplines, predictive analytics in welfare targeting, and automated document verification are no longer pilot curiosities; they are becoming embedded features of how the Indian state interacts with its citizens.

This paper asks a narrower and more pointed question than “is AI transforming Indian governance” — a proposition on which there is now broad consensus across government, industry, and academic commentary. The question here is whether that transformation is sustainable: whether it rests on infrastructure, finance, and institutional capacity strong enough to be maintained, scaled, and made equitable over time, or whether it is a set of high-visibility pilots resting on thin and unevenly disbursed funding. Sustainability, in this sense, is treated as a governance property rather than only an environmental one — it concerns whether administrative reform can be sustained institutionally,



fiscally, and socially, while also attending to the environmental costs of computing infrastructure and the developmental logic embedded in the United Nations Sustainable Development Goals (SDGs).

The paper proceeds in six further sections. Section 2 reviews the conceptual literature connecting digital governance, AI, and sustainability. Section 3 maps the current landscape of AI-enabled administrative reform in India, using the UN E-Government Development Index (EGDI) as a comparative benchmark. Section 4 examines the financing and institutional capacity behind these reforms, focusing on the IndiaAI Mission's budget allocation and utilisation record. Section 5 connects these findings to the SDG framework. Section 6 identifies the principal risks and challenges, and Section 7 offers policy recommendations before the paper concludes.

2. Literature Review and Conceptual Framework

Scholarship on e-government has long distinguished between the digitisation of administrative processes — moving existing paper-based procedures online — and their transformation, in which digital tools change how decisions are made and how citizens engage with the state (Layne & Lee, 2001; Bertot et al., 2010). The introduction of AI marks a further inflection point beyond this distinction. Where earlier e-government initiatives automated the transmission of information, AI systems are increasingly involved in the substance of administrative judgment itself: flagging fraud, ranking applicants, drafting responses, and triaging grievances. This raises the stakes of governance design, because errors or biases embedded in an algorithm can propagate across millions of interactions in a way that a single official's discretion cannot.

The sustainability dimension of this shift is addressed unevenly in the literature. Environmental sustainability scholarship has begun to note the energy and water intensity of large-scale computing infrastructure, including the data centres that underpin national AI missions (World Bank, 2025). Institutional sustainability scholarship, meanwhile, emphasises that digital reforms fail not for lack of technology but for lack of the human-capital, procurement, and interoperability capacity needed to operate and maintain them (Centre for Social and Economic Progress, 2025). A third strand, closer to development economics, situates digital governance reform within the Sustainable Development Goals, particularly SDG 16 (peace, justice, and strong institutions) and SDG 9 (industry, innovation, and infrastructure), treating administrative digitisation as an enabler of broader development outcomes rather than an end in itself.

For India specifically, the “3C” framework — carriage, content, and conduct — proposed in recent institutional analysis is a useful organising device (Centre for Social and Economic Progress, 2025). Carriage refers to the connectivity backbone; content refers to the digital services and data made available on that backbone; and conduct refers to the behavioural and regulatory rules — including AI governance guidelines — that structure how state and citizen interact within the system. This paper adopts a variant of that framework, treating sustainability as the extent to which carriage, content, and conduct are jointly and durably financed and institutionalised, rather than advancing unevenly.

A related strand of comparative public-administration literature cautions against treating digital reform as a purely technical undertaking. Layne and Lee's (2001) four-stage model of e-government maturity — cataloguing, transaction, vertical integration, and horizontal integration — implies that the value of any single digital or AI application depends on how well it is integrated with adjacent departments, databases, and legal frameworks, rather than on the sophistication of the application in isolation. Applied to India's federal structure, this suggests that the sustainability of AI-enabled reform depends



heavily on coordination between central ministries, state governments, and local bodies that often operate with divergent digital maturity levels, procurement cycles, and language requirements. Where a central AI initiative is not matched by comparable state-level capacity, the resulting reform can appear nationally significant in aggregate statistics while remaining shallow or uneven in citizens' lived experience of specific offices and departments. This tension between headline national indicators and ground-level implementation capacity recurs throughout the empirical sections that follow, and is one reason this paper deliberately reads national-level index data (Section 3) alongside programme-level financial execution data (Section 4) rather than relying on either in isolation.

3. AI in India's Administrative Reform: The Current Landscape

India's administrative reform agenda entered a distinctly technology-centred phase in 2025–26. The Union government has described 2025 as a year “dedicated to governance reforms,” citing simplification of rules, faster grievance redressal, and a shift in civil-service training under Mission Karmayogi from a rules-based to a role-based model (Ministry of Personnel, Public Grievances and Pensions, 2025). Concrete indicators cited by the government include the Central Administrative Tribunal closing approximately 93 percent of roughly nine lakh pending cases through digitisation and e-filing as of September 2025, and the CPGRAMS portal processing more than twenty lakh public grievances (Ministry of Personnel, Public Grievances and Pensions, 2025).

AI applications have begun to sit directly on top of this administrative digitisation. Analytics tools are used for fraud identification and tax-evasion detection, and a Model Context Protocol (MCP) server introduced by the government in 2026 allows AI tools to query official statistical datasets such as the Periodic Labour Force Survey, the Consumer Price Index, and the National Accounts Statistics directly (India Brand Equity Foundation, 2026). Citizen-facing initiatives such as the e-Sankhyiki statistical portal, launched in March 2026, extend this logic to public-facing data access (India Brand Equity Foundation, 2026). Separately, voice-AI systems are being piloted for state government helplines that otherwise struggle with volume: government helplines across India receive more than ten crore citizen calls a month, of which an estimated 40 to 60 percent go unanswered or unresolved under the existing model (AiSewak, 2026).

A useful benchmark for judging whether these initiatives constitute durable administrative reform, rather than isolated pilots, is India's trajectory on the United Nations E-Government Development Index, which combines an online-service index, a telecommunications-infrastructure index, and a human-capital index into a single composite score (United Nations Department of Economic and Social Affairs, 2024).

Table 1. India's E-Government Development Index (EGDI) and Component Indices, 2016–2024

Survey Year	EGDI Value	Global Rank	Online Service Index	Telecom Infrastructure Index
2016	0.4638	107	0.7464	0.1430
2018	0.5669	96	0.9514	0.2009
2020	0.5964	100	0.8529	0.3515
2022	0.5883	105	0.7934	0.3954
2024	0.6678	97	0.8184	0.5700

Source: Compiled by the author from United Nations Department of Economic and Social Affairs (2024); UN Public Administration Knowledgebase, India country profile (EGOVKB, n.d.).



The table shows two features relevant to the sustainability argument advanced in this paper. First, India's online service index has been consistently strong and, in most survey years, above the country's overall EGDI value — reflecting the visible, front-end success of platforms such as UPI, DigiLocker, and Aadhaar-linked services. Second, the telecommunications infrastructure index — the “carriage” component in the 3C framework — has historically lagged, though it has improved sharply between 2022 and 2024, nearly doubling in value. The net effect has been a global rank that dipped between 2018 and 2022 even as absolute scores rose, because other countries improved faster, before recovering to rank 97 of 193 in 2024 (United Nations Department of Economic and Social Affairs, 2024). This pattern is consistent with the paper's central claim: front-end digital content has advanced faster and more visibly than the underlying carriage and institutional capacity needed to sustain it at a competitive global pace.

The global comparative context reinforces this reading. The 2024 UN survey found that the proportion of the world's population living in countries with lagging digital government development fell from 45 percent in 2022 to 22.4 percent in 2024, and that 23 countries moved into higher EGDI groupings over the same period, with the global average EGDI rising from 0.6102 to 0.6382 (United Nations Department of Economic and Social Affairs, 2024). India's own EGDI improvement over the same window — from 0.5883 to 0.6678 — is therefore consistent with, and only modestly ahead of, a broader global upgrading trend, rather than representing an exceptional national leap. This matters for how India's AI-governance narrative should be read: much of the improvement visible in Table 1 reflects a general worldwide acceleration in digital government capacity following the pandemic-era push toward remote and online service delivery, and India's telecommunications catch-up between 2022 and 2024 in particular should be understood as closing a gap relative to peers rather than establishing a clear lead. Sustaining India's relative position, let alone improving it, will require the infrastructure gains recorded in the most recent survey cycle to be reinforced by continued investment, since a single strong survey cycle does not by itself indicate a durable structural shift.

4. Financing and Institutional Capacity

If Section 3 established that India's digital governance content has outpaced its infrastructural carriage, this section examines whether recent AI-specific financing is closing that gap. The IndiaAI Mission, approved by the Union Cabinet in March 2024 with a five-year outlay of approximately ₹10,372 crore (roughly \$1.25 billion), is the principal vehicle for AI infrastructure investment in Indian governance and industry, spanning seven pillars including compute capacity, foundation models, startup financing, datasets, skilling, and “Safe and Trusted AI” (Kumar, 2026; ValueAdd VC, 2026).

Table 2. IndiaAI Mission: Approved Outlay by Pillar and Annual Fund Utilisation, 2024–2027

Pillar / Year	Approved Outlay (₹ crore)	Notes
Compute Capacity	4,563.36	Largest single pillar; subsidises GPU access for startups and researchers
Foundation Models	1,971.37	Supports development of indigenous large language and generative models
Startup Financing	1,942.50	Channelled partly through a dedicated Fund of Funds
Safe & Trusted AI	20.46	Smallest pillar; covers bias audits and governance research
FY 2024–25 released	21.79	Against revised estimate of ₹173 crore



Pillar / Year	Approved Outlay (₹ crore)	Notes
FY 2025–26 released	379.15	Against revised estimate of ₹800 crore (as of Feb 2026)
FY 2026–27 budget estimate	1,000.00	Down from ₹2,000 crore budgeted the previous year

Source: Compiled by the author from Standing Committee on Communications and Information Technology (2026); Kumar (2026); Outlook Business (2026); Ministry of Finance (2026).

The pattern in Table 2 is stark. Against a five-year approved outlay of over ₹10,000 crore, actual fund releases in the mission's first two years totalled roughly ₹400 crore — a utilisation rate that a parliamentary standing committee itself flagged as concerning, noting that only about 32 percent of the funds budgeted for 2025–26 had been utilised as of December 2025 (Outlook Business, 2026). The budget estimate for 2026–27 was simultaneously reduced by half relative to the prior year's initial allocation, from ₹2,000 crore to ₹1,000 crore, a decision government official attributed to prior underutilisation but which independent analysts described as risking a slowdown in momentum at a critical stage of the mission (Kumar, 2026). Within the pillars, the allocation is heavily weighted toward compute infrastructure (over 44 percent of the total outlay), while the “Safe & Trusted AI” pillar — the one most directly concerned with governance safeguards, bias auditing, and accountability — received under 0.2 percent of the total approved outlay (Kumar, 2026).

This financing pattern matters directly for the sustainability argument. A governance reform agenda that depends on AI cannot be considered institutionally sustainable if the compute and model-development layers are prioritised many times over the safeguard and audit layer, and if disbursement consistently lags approved allocations by a wide margin. It also illustrates a structural asymmetry worth noting for comparative purposes: private capital committed to India's AI and cloud infrastructure by global technology firms — reported at more than \$50 billion from companies such as Amazon and Microsoft — considerably exceeds the public IndiaAI outlay, raising questions about which actors will ultimately shape the “conduct” layer of AI-enabled governance if public capacity does not keep pace (Outlook Business, 2026).

Beyond the mission's own accounts, its early operational reach has so far been modest relative to its stated ambitions. As of the most recent parliamentary disclosure, subsidised compute access under the mission had been extended to 114 academic researchers, 47 startups and MSMEs, 36 early-stage startups, 10 early-stage researchers, 32 students, 8 IndiaAI Fellows, and 58 government entities (Outlook Business, 2026). Against a national research and startup ecosystem of India's scale, these figures represent a narrow initial beachhead rather than the population-scale transformation implied by the mission's public framing, and they underline why fund-utilisation data, rather than approved-outlay figures alone, offers the more reliable indicator of institutional readiness. A further complication is that MeitY's overall allocation for 2026–27, at roughly ₹21,600 crore, places the IndiaAI Mission's ₹1,000 crore component within a much larger ministry budget that must also fund Aadhaar operations through the Unique Identification Authority of India (UIDAI), which itself reported that its 2026–27 allocation of ₹572.41 crore fell well short of the ₹1,200 crore it had requested and would be insufficient to meet its operational requirements (Outlook Business, 2026). This suggests that AI-specific financing constraints are not isolated to the IndiaAI Mission but reflect a broader pattern of digital-infrastructure programmes competing for limited fiscal headroom within the same ministry.



5. Sustainability Dimensions: Aligning AI Governance with the SDGs

Read against the Sustainable Development Goals, India's AI-enabled governance reforms map most directly onto SDG 16 (strong institutions and access to justice), SDG 9 (resilient infrastructure and innovation), and SDG 10 (reduced inequalities). The CPGRAMS grievance-redressal expansion and the Central Administrative Tribunal's digitisation-driven case clearance both speak to SDG 16's emphasis on accessible, accountable institutions (Ministry of Personnel, Public Grievances and Pensions, 2025). The IndiaAI Mission's compute and datasets pillars speak to SDG 9's infrastructure and innovation targets, while its FutureSkills and startup-financing pillars are framed by the government as instruments of inclusive economic participation, relevant to SDG 10 (India Brand Equity Foundation, 2026).

However, sustainability in the SDG sense also requires attention to two dimensions that receive less prominence in current Indian policy discourse. The first is environmental: the World Bank's 2025 Digital Progress and Trends Report frames connectivity and computing capacity as prerequisites for “strengthening AI foundations,” but expanding data-centre and GPU infrastructure at the pace India's AI mission envisions carries an energy and water footprint that has not yet been systematically incorporated into domestic AI governance guidance (World Bank, 2025). The second is linguistic and demographic inclusion: India's population interacts with the state across more than twenty scheduled languages and substantial variation in digital literacy, and the same helpline access gap that AI is meant to close — the 40–60 percent of citizen calls currently unresolved — is itself evidence that digital and AI-based channels have not yet substituted adequately for human-mediated access in large parts of the country (AiSewak, 2026). A sustainable digital governance agenda, in the fullest SDG sense, needs to treat multilingual accessibility and energy-conscious infrastructure design as core design constraints rather than as secondary considerations to be addressed after core AI capability is built.

6. Challenges and Risks

Three categories of risk stand out from the evidence assembled in this paper. The first is execution risk: the gap between approved outlay and actual disbursement documented in Table 2 suggests that procurement bottlenecks, capacity constraints within implementing ministries, and possibly overambitious initial budgeting are limiting the pace at which AI infrastructure investment translates into operational systems (Outlook Business, 2026). The second is governance-lag risk: India's AI Governance Guidelines, released by the Ministry of Electronics and Information Technology in November 2025, remain non-binding, and a private member's Artificial Intelligence (Ethics and Accountability) Bill introduced in December 2025 has not been enacted, leaving the accountability framework for AI-assisted administrative decisions without statutory backing even as such systems are deployed operationally (Ministry of Electronics and Information Technology, 2025). The third is equity risk: AI systems trained or deployed with limited regard to India's linguistic and socio-economic diversity risk entrenching rather than narrowing the access gaps documented in the CPGRAMS and helpline data, particularly for citizens with lower digital literacy or in regions with weaker telecommunications infrastructure — the “carriage” gap that Table 1 shows has only recently begun to close (Centre for Social and Economic Progress, 2025).

A further structural risk concerns capacity dependence on private infrastructure. With private technology-sector investment in Indian AI and cloud infrastructure substantially exceeding public IndiaAI Mission outlays, the state's ability to set binding standards for algorithmic transparency, data localisation, and bias auditing may be constrained by its comparatively limited fiscal leverage over the infrastructure that increasingly underpins its own administrative systems (Outlook Business, 2026).



A fifth, cross-cutting risk is regulatory fragmentation. India currently governs AI-related activity through a patchwork of instruments — the Digital Personal Data Protection Act, sector-specific rules under the Telecommunications Act, 2023, the non-binding AI Governance Guidelines, and a still-unenacted AI Ethics and Accountability Bill — with a more comprehensive Digital India Act still under discussion (Mali, 2026). For administrative agencies deploying AI tools in the interim, this leaves considerable discretion over how principles such as transparency, explainability, and grievance redressal for algorithmic decisions are operationalised in practice, with limited external audit or enforcement mechanism. Agencies that move quickly to adopt AI-assisted decision tools may therefore do so ahead of a settled accountability architecture, creating downstream legal and reputational exposure if such systems are later found to have produced discriminatory or erroneous outcomes at scale — a risk that is amplified, not mitigated, by the scale advantages that make AI attractive for administration in the first place.

7. Policy Recommendations

Four recommendations follow from the analysis above. First, fund utilisation for AI governance programmes should be reported publicly on a quarterly rather than annual basis, with utilisation-linked release schedules to reduce the gap between budgeted and disbursed amounts documented in Table 2. Second, the proportion of AI mission funding allocated to safeguard functions — bias audits, algorithmic impact assessments, and grievance mechanisms specific to AI-assisted decisions — should be increased substantially from its current sub-one-percent share, and ideally placed on a statutory footing through enactment of binding AI accountability legislation rather than voluntary guidelines. Third, telecommunications infrastructure investment (the “carriage” layer) should continue to be prioritised alongside content-layer AI applications, since Table 1 shows this has historically been the binding constraint on India's global e-government ranking. Fourth, multilingual accessibility and energy-efficiency benchmarks should be built into procurement standards for government AI systems from the design stage, rather than treated as later-stage compliance requirements, so that the sustainability of administrative reform is assessed on social and environmental as well as fiscal grounds.

A fifth and more structural recommendation follows from the federal coordination gap identified in Section 2: a shared, centrally maintained technical and legal toolkit — covering model auditing checklists, grievance-redressal templates for AI-assisted decisions, and interoperable data standards — should be made available to state and local governments at no additional procurement cost, so that AI-enabled reform is not confined to states or departments with greater existing digital maturity. Without such a mechanism, the risk is a two-track administrative system in which better-resourced states and central agencies deploy increasingly sophisticated AI tools while others remain reliant on manual processes, widening rather than narrowing the very access gaps that digital governance reform is intended to close. Sequencing this toolkit release alongside, rather than after, the compute and foundation-model investments already under way would help ensure that institutional capacity-building keeps pace with technical capability, addressing directly the execution-risk pattern documented in Table 2.

8. Conclusion

India's administrative reform agenda has moved decisively toward AI-enabled digital governance, and the visible achievements — rising online service indices, expanding grievance-redressal throughput, and an increasingly ambitious AI mission architecture — are genuine. Yet the evidence examined in



this paper indicates that sustainability, understood as the durable institutional, fiscal, and social capacity to maintain and equitably extend these reforms, still lags behind their announcement. India's EGDI trajectory shows telecommunications infrastructure only recently catching up to a longer-standing strength in online services; the IndiaAI Mission's fund-utilisation record shows a persistent gap between approved outlay and operational disbursement; and the allocation within that mission remains heavily weighted toward compute capacity relative to the governance safeguards needed to make AI-assisted administration accountable. For India's digital governance transformation to be sustainable in the fuller sense used throughout this paper — institutionally, fiscally, environmentally, and socially — future policy will need to close these gaps with the same urgency that has been applied to building the underlying technology itself.

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