

Sustainable by Design: Can India's AI Ambitions Align with Climate and Governance Goals?

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Abstract:

India's dual pursuit of artificial intelligence leadership and climate responsibility has produced a policy landscape in which digital ambition and ecological restraint sit uneasily together. This paper examines whether the IndiaAI Mission, approved in March 2024 with an outlay of ₹10,371.92 crore, can be reconciled with India's updated Nationally Determined Contributions, which commit the country to a 45 percent reduction in emissions intensity and 50 percent non-fossil power capacity by 2030. Drawing on government budget documents, sectoral energy forecasts, and comparative governance literature, the paper maps three points of tension: the electricity demands of expanding data-centre infrastructure, the absence of binding sustainability clauses in AI compute-allocation frameworks, and the governance gaps left by data-protection and algorithmic-accountability regimes that were not designed with computational intensity in mind. The paper argues that 'sustainable by design' is presently more rhetorical aspiration than institutional practice, and proposes a framework linking compute governance, renewable-energy procurement, and resource-impact disclosure to close this gap. It concludes that India's AI strategy can advance climate and governance goals simultaneously only if sustainability criteria are embedded into Mission architecture now, before infrastructure commitments harden into fixed, difficult-to-reverse capacity.

Keywords: IndiaAI Mission; AI governance; climate policy; data centres; sustainable development; digital constitutionalism; energy transition; algorithmic accountability

1. Introduction

India enters the second half of this decade committed simultaneously to two large, resource-intensive national projects: an ambitious expansion of artificial intelligence (AI) capability, and an equally ambitious climate transition anchored in its updated Nationally Determined Contributions (NDCs) under the Paris Agreement. Neither project was designed with explicit reference to the other. The IndiaAI Mission, approved by the Union Cabinet on 7 March 2024 with a five-year outlay of ₹10,371.92 crore, aims to build a sovereign compute base of more than 10,000 graphics processing units (GPUs), develop indigenous large multimodal models, and position India as a hub for 'safe and trusted' AI (Press Information Bureau [PIB], 2024). At the same time, India's 2022 NDC update commits the country to reducing the emissions intensity of its GDP by 45 percent below 2005 levels by 2030, sourcing 50 percent of installed electric power capacity from non-fossil sources, and reaching net-zero emissions by 2070 (Ministry of Environment, Forest and Climate Change [MoEFCC], 2022).

These two commitments are not inherently incompatible, but neither are they automatically aligned. Artificial intelligence, and particularly the large-scale training and inference workloads associated with generative and multimodal models, is among the most electricity-intensive branches of digital infrastructure in the world today. The International Energy Agency, in its Electricity 2024 report, estimates that data centres, AI, and cryptocurrency together consumed approximately 460 terawatt-hours (TWh) of electricity globally in 2022, about 2 percent of global electricity use, with total data-centre electricity consumption projected to exceed 1,000 TWh by 2026 (IEA, 2024). India's own data-centre capacity, driven substantially by cloud and AI workloads, reached approximately 1,255 megawatts (MW) between January and September 2024 and was projected to reach around 1,600 MW by the end of the year (CBRE, 2024) — with independent industry forecasts projecting a rise to over 3 GW of IT load by 2028 (Cushman & Wakefield, as cited in W.Media, 2024), concentrated disproportionately in Mumbai, Chennai, and the National Capital Region.

This paper asks a deliberately narrow but consequential question: can India's AI ambitions, as presently structured, be reconciled with its climate and governance commitments, or does the current trajectory of AI expansion risk quietly undermining both? The question matters for three reasons. First, India's AI strategy is being built during the very window in which its climate commitments require the steepest reductions in emissions intensity, so that new energy-intensive infrastructure built without sustainability safeguards compounds, rather than merely coexists with, decarbonisation pressure. Second, India's AI governance instruments — expressed through platform advisories, the Mission's 'Safe & Trusted AI' pillar, and the Digital Personal Data Protection Act, 2023 (DPDP Act) — emphasise content moderation, data protection, and algorithmic safety far more than environmental or resource governance, leaving a structural blind spot. Third, India's position as a large, fast-growing digital economy makes its choices a plausible template for other developing economies pursuing AI capability without the fiscal and energy slack available to wealthier states; how India resolves this tension is therefore of comparative interest well beyond its own borders.

The paper proceeds in six parts. Section 2 outlines the policy architecture of India's AI ambitions, focusing on the IndiaAI Mission's budgetary and institutional design. Section 3 examines the climate cost of AI expansion, with attention to data-centre energy demand and its relationship to India's renewable-energy trajectory. Section 4 turns to governance, asking whether existing frameworks are equipped to hold AI infrastructure accountable to sustainability criteria. Section 5 identifies specific points of tension between ambition and commitment, and Section 6 proposes a 'sustainable by design' framework intended to close the gap before infrastructure lock-in makes retrofitting prohibitively costly.

2. India's AI Ambitions: Policy Architecture and Strategic Vision

India's contemporary AI strategy did not begin with the IndiaAI Mission. NITI Aayog's 2018 national strategy paper, #AIforAll, first articulated a vision of AI as a tool for inclusive development rather than purely commercial advantage, identifying healthcare, agriculture, education, smart mobility, and smart cities as priority sectors (NITI Aayog, 2018). That framing — AI in service of development goals rather than AI as an end in itself — has persisted rhetorically even as the scale of investment has grown substantially.

The IndiaAI Mission represents the most concrete institutional expression of this strategy to date. Approved in March 2024 under the guiding vision of 'Making AI in India and Making AI Work for India,' the Mission is structured around seven pillars: IndiaAI Compute Capacity, the IndiaAI Innovation Centre,

the IndiaAI Datasets Platform, the IndiaAI Application Development Initiative, IndiaAI FutureSkills, IndiaAI Startup Financing, and Safe & Trusted AI (PIB, 2024). The compute pillar is the most capital-intensive, committing to build a scalable AI computing ecosystem of more than 10,000 GPUs through public-private partnership, intended to lower the cost of compute access for startups, researchers, and public institutions that would otherwise depend on foreign cloud infrastructure. The Innovation Centre, allocated close to ₹2,000 crore, is tasked with developing indigenous large multimodal models and domain-specific foundational models for sectors such as agriculture and healthcare (Drishti IAS, 2024). Budgetary allocation illustrates both the ambition and its staged, incremental character. The Union Budget for 2024-25 allocated ₹21,936.90 crore to the Ministry of Electronics and Information Technology (MeitY) as a whole, of which ₹551.75 crore was earmarked specifically for the IndiaAI Mission in that fiscal year — a modest fraction of the five-year ₹10,371.92 crore outlay, reflecting the fact that GPU procurement and compute infrastructure are being built out progressively rather than as a single upfront capital expenditure (IndiaAI, 2024). This staged rollout matters for the argument developed later in this paper: because the Mission's largest infrastructure commitments remain in an early phase, institutional room still exists to embed sustainability criteria into compute procurement, data-centre siting, and energy-sourcing decisions before those commitments harden into fixed infrastructure.

Table 1- IndiaAI Mission — Budget Structure and Pillars, 2024

Mission Pillar / Allocation	Scale / Scope	Key Objective
IndiaAI Compute Capacity	Core share of ₹10,371.92 crore five-year outlay	10,000+ GPUs via public-private partnership; shared national compute access
IndiaAI Innovation Centre	~₹2,000 crore earmarked	Indigenous large multimodal models (LMMs) and sector-specific foundational models
IndiaAI Datasets Platform	Part of overall outlay	Unified access to quality non-personal datasets for startups and researchers
IndiaAI FutureSkills	Part of overall outlay	Expand AI courses across undergraduate, master's, and PhD programmes
IndiaAI Startup Financing	Part of overall outlay	Risk capital for AI startups
Safe & Trusted AI	Part of overall outlay	Responsible and ethical AI practice; content and misuse safeguards
Union Budget 2024-25 (MeitY, total)	₹21,936.90 crore	Ministry-wide digital economy allocation

Mission Pillar / Allocation	Scale / Scope	Key Objective
Union Budget 2024-25 (IndiaAI Mission, specific)	₹551.75 crore	First-year disbursement toward the five-year Mission outlay

Source: Press Information Bureau (2024); IndiaAI (2024); Drishti IAS (2024).

Two features of India's AI policy architecture deserve particular note. The first is its explicit emphasis on democratised, low-cost compute access — the idea that AI capability should not be the preserve of large private firms alone, but should be extended to public researchers, startups, and government departments through shared infrastructure (PIB, 2024). This has climate implications: shared, centrally managed compute infrastructure is, in principle, easier to govern for energy efficiency and renewable sourcing than a fragmented landscape of privately procured GPUs scattered across many uncoordinated data centres. The second is the Mission's Safe & Trusted AI pillar, which frames safety primarily in terms of bias, misuse, and content risk rather than resource or environmental risk. Read together, these two features suggest a policy architecture that is structurally well positioned to incorporate sustainability governance, because compute is centralised and coordinated, but has not yet done so explicitly in its stated safety and trust framework.

It is also worth situating the IndiaAI Mission within the broader trajectory of Indian digital public infrastructure (DPI) policy, of which it is increasingly treated as a natural extension. India's DPI approach — exemplified by Aadhaar, the Unified Payments Interface, and the Open Network for Digital Commerce — has generally emphasised low-cost, interoperable, publicly stewarded infrastructure rather than purely market-led provision. The IndiaAI Mission borrows this logic for compute and datasets. Whether it will also borrow the DPI tradition's occasional attentiveness to public-interest safeguards, or whether AI compute will instead be treated as a purely technical utility exempt from comparable scrutiny, remains an open institutional question with direct bearing on whether climate and governance goals are built into the Mission's next phase.

3. The Climate Cost of Computation: Energy, Data Centres, and Emissions

Every dimension of the IndiaAI Mission's technical ambition — more GPUs, larger foundational models, expanded application development — translates directly into greater electricity demand. This is not a peripheral concern for AI policy; it sits close to its physical core. Training a large multimodal model requires sustained, high-density power draw over weeks or months, and inference at national scale requires additional, continuous power draw thereafter. The IEA's Electricity 2024 report estimates that data centres, together with AI and cryptocurrency workloads, consumed approximately 460 TWh globally in 2022, about 2 percent of global electricity demand, and projects that data-centre electricity consumption alone could exceed 1,000 TWh by 2026 — roughly equivalent to the electricity consumption of Japan (IEA, 2024). The report attributes much of this acceleration to the rapid deployment of power-hungry GPUs for AI services over the preceding year.

India's own trajectory, while still small in absolute global terms, mirrors this acceleration. CBRE's 2024 India Data Centre Market Update found that India's total data-centre capacity reached approximately 1,255 MW between January and September 2024, projected to expand to around 1,600 MW by year-end, with a further 475 MW under construction (CBRE, 2024). Longer-range industry forecasts point to continued rapid growth: Cushman & Wakefield project India's data-centre IT load will roughly triple to 3.29 GW by

2028, while ICRA projects operational capacity more than doubling to 2,000-2,100 MW by FY2027 (as cited in W.Media, 2024). Capacity remains heavily concentrated geographically, with Mumbai alone accounting for roughly 49 percent of India's data-centre capacity as of 2024 (CBRE, 2024). This concentration carries two governance-relevant implications. First, the electricity and cooling-water burden of AI-linked expansion is not distributed evenly across India's states but falls disproportionately on a small number of grids and metropolitan regions. Second, it creates an opportunity: because demand is geographically concentrated, targeted renewable-energy procurement and grid-planning interventions in a handful of locations could address a disproportionate share of the sector's emissions footprint, without requiring uniform national policy change.

Table 2- India's AI-Related Electricity Demand and Climate Commitments

Indicator	Value / Target	Year
India data-centre capacity (actual)	~1,255 MW (Jan-Sep); ~1,600 MW projected by year-end	2024
India data-centre capacity (projected)	>3 GW IT load	2028
India operational data-centre capacity (projected)	2,000-2,100 MW	FY2027
Global data centre/AI/crypto electricity consumption	~460 TWh (~2% of global use)	2022
Global data-centre electricity consumption (projected)	>1,000 TWh	2026
Geographic concentration of India's data-centre capacity	Mumbai ~49% of total capacity	2024
India NDC — emissions-intensity reduction target	45% below 2005 levels	2030 (target)
India NDC — non-fossil power capacity target	50% of installed capacity	2030 (target)
India non-fossil installed capacity (actual)	45.5%	July 2024
Climate Action Tracker rating of India's non-fossil capacity target	"Highly insufficient" (current policies already exceed target)	2023

Source: CBRE (2024); W.Media (2024), citing Cushman & Wakefield and ICRA; IEA (2024); MoEFCC (2022); Ministry of Power (2024); Climate Action Tracker (2023).

The core tension is straightforward to state. India's updated NDC commits to sourcing 50 percent of installed electric power capacity from non-fossil sources by 2030 and reducing emissions intensity by 45 percent below 2005 levels over the same period (MoEFCC, 2022). Progress toward the capacity target has

been faster than the headline 2030 deadline suggests: in a July 2024 reply to the Rajya Sabha, the Minister of Power stated that India had already reached 45.5 percent installed capacity from non-fossil sources, with a plan in place not merely to meet but to surpass the 50 percent target (Ministry of Power, 2024). The Climate Action Tracker's most recent assessment similarly finds that India's power sector plans already exceed the 50 percent non-fossil capacity target under current policy settings, rating the target itself as 'highly insufficient' precisely because it is likely to be over-achieved without additional ambition (Climate Action Tracker, 2023). Yet installed capacity share is not the same as generation share: solar and wind capacity, while expanding rapidly, generate intermittently and at lower average utilisation than coal or gas, so a grid approaching 50 percent non-fossil installed capacity can still draw the majority of its actual electricity from fossil generation. This distinction matters directly for AI policy: data centres require firm, continuous baseload power, and in the absence of storage or dedicated renewable power-purchase agreements, new AI-driven demand is disproportionately likely to be met by dispatchable fossil generation even as headline capacity targets are met or exceeded. The marginal unit of electricity consumed by a new data centre coming online today is, under current dispatch patterns, more likely to be coal- or gas-fired than the average unit already on the grid.

A further complication is specific to AI workloads: unlike many other forms of electricity demand, GPU-intensive AI training clusters draw power in a comparatively 'peaky,' high-density pattern that can strain local transmission and distribution infrastructure even where aggregate annual energy availability is sufficient, particularly given the geographic concentration of India's data-centre capacity described above. India's electricity-planning apparatus is only beginning to grapple with this kind of concentrated, fast-growing digital-sector demand within the broader framework of the National Electricity Plan 2023 (Central Electricity Authority, 2023). For the IndiaAI Mission specifically, this suggests that climate alignment cannot be achieved through aggregate renewable-capacity targets alone; it requires demand-side measures — mandated renewable power-purchase agreements for Mission-funded compute, and integration of data-centre siting decisions with regional grid and water-resource planning.

4. Governance Goals: Digital Constitutionalism, Accountability, and the DPDP Act

If climate alignment is primarily a question of energy sourcing and infrastructure siting, governance alignment is a question of institutional design: whether the rules that govern AI development in India are equipped to hold that development accountable not only for bias, safety, and misuse, but for its resource footprint and its consistency with India's own public-interest commitments.

India's most developed piece of AI-adjacent governance infrastructure is the Digital Personal Data Protection Act, 2023 (DPDP Act), which establishes obligations around consent, purpose limitation, and data-fiduciary accountability for personal data processing (Ministry of Electronics and Information Technology [MeitY], 2023). The Act is a significant governance milestone, but its scope is deliberately narrow: it governs how personal data may be collected and processed, not how the computational infrastructure used to process that data is sited, powered, or resourced. A data centre training a model on personal data lawfully consented to under the DPDP Act incurs no additional regulatory obligation under that Act with respect to its electricity source, water use, or carbon footprint. Governance and environmental regulation in India's AI ecosystem therefore currently run on separate tracks: data-protection law governs the informational content of AI systems, while environmental clearance and electricity regulation, largely unconnected to AI-specific policy, govern the physical infrastructure that runs them.

The IndiaAI Mission's Safe & Trusted AI pillar, together with the advisories issued to platforms in 2024 concerning 'under-tested' AI models, illustrates where the centre of gravity of India's AI governance currently sits: overwhelmingly on content risk, misinformation, and platform accountability, rather than on infrastructure or resource governance (MediaNama, 2024). This is not a criticism of the substance of those measures, which respond to genuine and pressing risks. It is, however, a structural observation: none of India's current AI-specific governance instruments impose disclosure, reporting, or accountability requirements analogous to an environmental or resource impact assessment for AI infrastructure, despite comparable frameworks already existing in Indian environmental law for other capital-intensive infrastructure, such as thermal power plants, in the form of environmental impact assessments (EIAs) under the Environment (Protection) Act, 1986.

This gap is consequential because AI compute infrastructure, unlike most information-processing activity that has historically escaped environmental scrutiny, has physical characteristics much closer to industrial infrastructure than to conventional software: large land footprints, substantial water use for cooling, high and continuous electricity draw, and, frequently, diesel backup generation. Treating AI data-centre construction and compute procurement as purely a digital-economy policy matter, governed by IT ministries rather than by environmental and energy regulators, risks reproducing for AI the same regulatory blind spot that historically allowed other energy-intensive industries to expand with limited environmental accountability before EIA requirements matured.

A brief comparative note is instructive. Regulatory approaches elsewhere, including the European Union's AI Act, which incorporates some environmental-impact reporting obligations for high-risk systems, and voluntary sustainability-reporting frameworks adopted by some hyperscale cloud providers, offer partial templates, though none directly transferable to India's institutional context. What these comparisons chiefly illustrate is that the absence of any resource-governance dimension in India's AI-specific frameworks to date is a policy choice, not a technical inevitability; other jurisdictions building comparable AI infrastructure at comparable speed have at least begun to treat environmental accountability as part of the AI governance question, rather than a separate matter left entirely to general environmental law.

5. Points of Tension: Where AI Ambitions Strain Climate and Governance Commitments

Bringing the preceding two sections together, three specific points of tension can be identified between India's AI ambitions and its climate and governance commitments.

The first is a timing mismatch. The IndiaAI Mission's compute build-out, concentrated in 2024-2028, coincides precisely with the years in which India's NDC requires the steepest incremental progress toward its 2030 emissions-intensity and non-fossil capacity targets. New, high-density electricity demand introduced during this window does not merely coexist with the climate transition; it competes directly with other decarbonising sectors, including electric mobility, green hydrogen production, and residential electrification, for the same finite pool of near-term renewable generation and grid capacity. Absent a demand-side sustainability mandate specific to Mission-funded compute, no institutional mechanism ensures that AI's marginal electricity demand is met preferentially by new renewable capacity rather than by the dispatchable fossil generation that currently balances India's grid.

The second is an institutional mismatch. Responsibility for AI policy sits principally with MeitY and, for macro-strategic direction, with NITI Aayog; responsibility for electricity generation and grid planning sits with the Ministry of Power and state electricity regulators; responsibility for environmental clearance sits with the Ministry of Environment, Forest and Climate Change. The IndiaAI Mission's governing

documents, as publicly described, do not establish a formal, mandatory coordination mechanism linking these three domains at the point where individual data-centre or compute-cluster decisions are made. This is not unusual internationally, but it means that sustainability outcomes currently depend on voluntary alignment between agencies rather than on a binding requirement built into the Mission's disbursement or approval process.

The third is a metrics mismatch. India's climate commitments are measured in capacity share, emissions intensity, and generation mix at the national level; the IndiaAI Mission is measured, in its own public communications, in GPU counts, model releases, startup funding disbursed, and skilling outcomes (PIB, 2024). None of the Mission's publicly reported key performance indicators includes an energy-efficiency, renewable-sourcing, or carbon-intensity metric specific to Mission-funded compute infrastructure. Two large national programmes are therefore each tracked against entirely disjoint sets of indicators, with no shared metric through which progress on one could be checked against progress, or regress, on the other. These three mismatches compound rather than operate independently. A compute cluster built during 2024-2026 without a renewable power-purchase agreement (timing mismatch), approved through a purely digital-economy channel without environmental-impact review (institutional mismatch), and reported publicly only in terms of GPU capacity and model output (metrics mismatch), can proceed to completion and years of operation without the tension between AI ambition and climate commitment ever becoming visible in either programme's own reporting. This is the practical mechanism by which sustainable-by-design AI risks remaining aspirational rather than institutional: not through any single decision that deliberately privileges AI growth over climate goals, but through the absence of any point in the process at which the two are required to be reconciled.

6. Towards Sustainable-by-Design AI: Policy Pathways

Closing the gaps identified above does not require abandoning the IndiaAI Mission's core ambitions; it requires embedding four design principles into its next phase before infrastructure commitments become difficult to reverse.

First, mandatory renewable-sourcing requirements for Mission-funded compute. Any data-centre or GPU-cluster project receiving IndiaAI Mission capital or subsidised access should be required to demonstrate a renewable power-purchase agreement, or equivalent firm renewable-plus-storage arrangement, covering a defined and rising share of its electricity demand, rather than relying on the ambient grid mix. This converts a currently voluntary, reputational consideration into an enforceable disbursement condition, at exactly the point, capital allocation, where government retains the most leverage.

Second, integration of compute-siting decisions with state-level grid and water planning. Given the geographic concentration of data-centre capacity in Mumbai and a small number of other metropolitan hubs, coordinated siting review, assessing local grid headroom, water stress, and renewable-generation proximity before approving large compute clusters, would allow a small number of targeted interventions to address a disproportionate share of the sector's footprint, building on the demand-forecasting work already carried out under the National Electricity Plan 2023 (Central Electricity Authority, 2023).

Third, a shared metrics framework linking AI-Mission and NDC reporting. Publishing an energy-intensity and renewable-sourcing metric for Mission-funded compute alongside existing GPU-capacity and model-output metrics would make the Mission's own public reporting reflect its climate footprint, closing the metrics mismatch identified in Section 5 without requiring a new regulatory body, only a reporting requirement attached to funds already being disbursed.

Fourth, extension of resource-impact disclosure to compute infrastructure. Just as environmental impact assessments now apply, however imperfectly, to large industrial infrastructure, a lightweight sustainability and resource-impact disclosure, distinct from but complementary to the algorithmic bias and safety assessments already contemplated under the Mission's Safe & Trusted AI pillar, could be required for compute infrastructure above a defined capacity threshold. This need not replicate the full EIA process; even a proportionate disclosure covering projected electricity demand, water use, and renewable-sourcing plans would close much of the institutional mismatch identified above.

Table 3- Sustainability Gaps and Proposed Policy Responses

Identified Mismatch	Current Status	Proposed Policy Response
Timing	Compute build-out (2024-2028) coincides with the steepest years of NDC compliance	Mandatory renewable power-purchase agreements for Mission-funded compute, phased with capacity build-out
Institutional	No mandatory coordination between MeitY, Ministry of Power, and MoEFCC on compute-siting decisions	Joint siting review incorporating grid headroom and water stress before large-cluster approval
Metrics	Mission KPIs track GPUs, model releases, and skilling; no energy or carbon metric	Publish energy-intensity and renewable-sourcing metrics alongside existing Mission KPIs
Assessment gap	No sustainability-impact disclosure comparable to environmental impact assessment for large compute infrastructure	Proportionate resource-impact disclosure required above a defined capacity threshold

Source: Author's analysis, drawing on PIB (2024), IEA (2024), MoEFCC (2022), and Central Electricity Authority (2023).

None of these four measures requires new primary legislation; each could be implemented through Mission guidelines, disbursement conditions, or ministry-level coordination mechanisms already within the government's administrative reach. This is precisely what makes the current absence of such measures notable: the constraint is not legal or technical capacity, but the fact that AI policy and climate policy have, to date, been designed and administered as separate governance tracks with no mandatory point of convergence. Building that convergence into the IndiaAI Mission's next phase, while its infrastructure commitments remain substantially in build-out rather than completed, is the central opportunity this paper identifies.

7. Discussion and Limitations

This analysis has several limitations worth acknowledging. First, publicly available data on the energy intensity and sourcing of India's actual AI-related compute infrastructure remains limited; the figures used here are drawn substantially from sector-wide data-centre forecasts (McKinsey, IEA) rather than IndiaAI Mission-specific disclosures, because the latter are not yet systematically published. This paper's argument for a shared metrics framework is, in part, a response to this data gap: better analysis of the climate-AI intersection in India will itself depend on the governance reforms proposed here. Second, this paper has focused primarily on electricity and, to a lesser extent, water as the environmental dimensions of AI infrastructure; it has not addressed the embodied carbon and material footprint of semiconductor manufacturing and GPU procurement, much of which occurs outside India and falls outside the scope of India's own NDC accounting, but which remains relevant to a fuller sustainability assessment of the Mission's compute strategy. Third, the paper has treated governance primarily in terms of formal institutional mechanisms, assessments, reporting requirements, and coordination structures, while paying comparatively less attention to civil-society oversight, parliamentary scrutiny, and public consultation, which are likely to be equally important in determining whether any sustainability framework, once designed, is actually enforced rather than existing only on paper.

It is also worth being explicit about what this paper does not claim. It does not claim that India's AI strategy is, in aggregate, environmentally reckless, nor that the IndiaAI Mission's ambitions are misplaced; India's underlying rationale, that AI capability should be broadly accessible rather than concentrated in a handful of firms, and that compute infrastructure should be publicly stewarded in the manner of other digital public infrastructure, is, if anything, more conducive to eventual sustainability governance than a purely market-led alternative would be, precisely because centralised, public compute is easier to regulate than fragmented private infrastructure. The argument here is narrower: this structural advantage has not yet been used, and the window in which it can be used without costly retrofitting is closing as infrastructure commitments mature from the 2024-25 build-out phase into longer-term operation.

8. Conclusion

India's AI ambitions and its climate and governance commitments are not on a collision course by necessity, but they are also not currently on a converging one. The IndiaAI Mission was designed, budgeted, and launched substantially independently of India's NDC targets and of the governance instruments, principally the DPDP Act and the Mission's own Safe & Trusted AI pillar, that address AI's informational and safety risks but not its resource footprint. This paper has identified three specific mismatches, in timing, institutional responsibility, and reporting metrics, that together explain how two well-intentioned national programmes can each proceed on schedule while quietly working against the other's underlying objectives.

The central finding is a modestly optimistic one: closing this gap does not require India to slow its AI ambitions, nor to weaken its climate commitments, but to make an administrative choice it has not yet made, treating compute infrastructure the way it already treats other large industrial infrastructure, with disclosure, siting review, and resource-sourcing conditions attached to public funding and approval. Because the IndiaAI Mission's largest infrastructure commitments remain, as of this writing, in an early and staged phase of build-out, the institutional cost of making that choice now is considerably lower than it will be once compute clusters, data-centre sites, and procurement contracts are locked in for the remainder of the decade.

Sustainable by design is, at present, more a description of what India's AI strategy could become than an accurate description of what it currently is. Whether it becomes the former will depend less on any single policy instrument than on whether India's AI governance architecture, in its next iteration, is built to ask not only whether an AI system is safe and trustworthy, but also what it costs the grid, the water table, and the emissions-intensity target the country has already promised to meet.

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