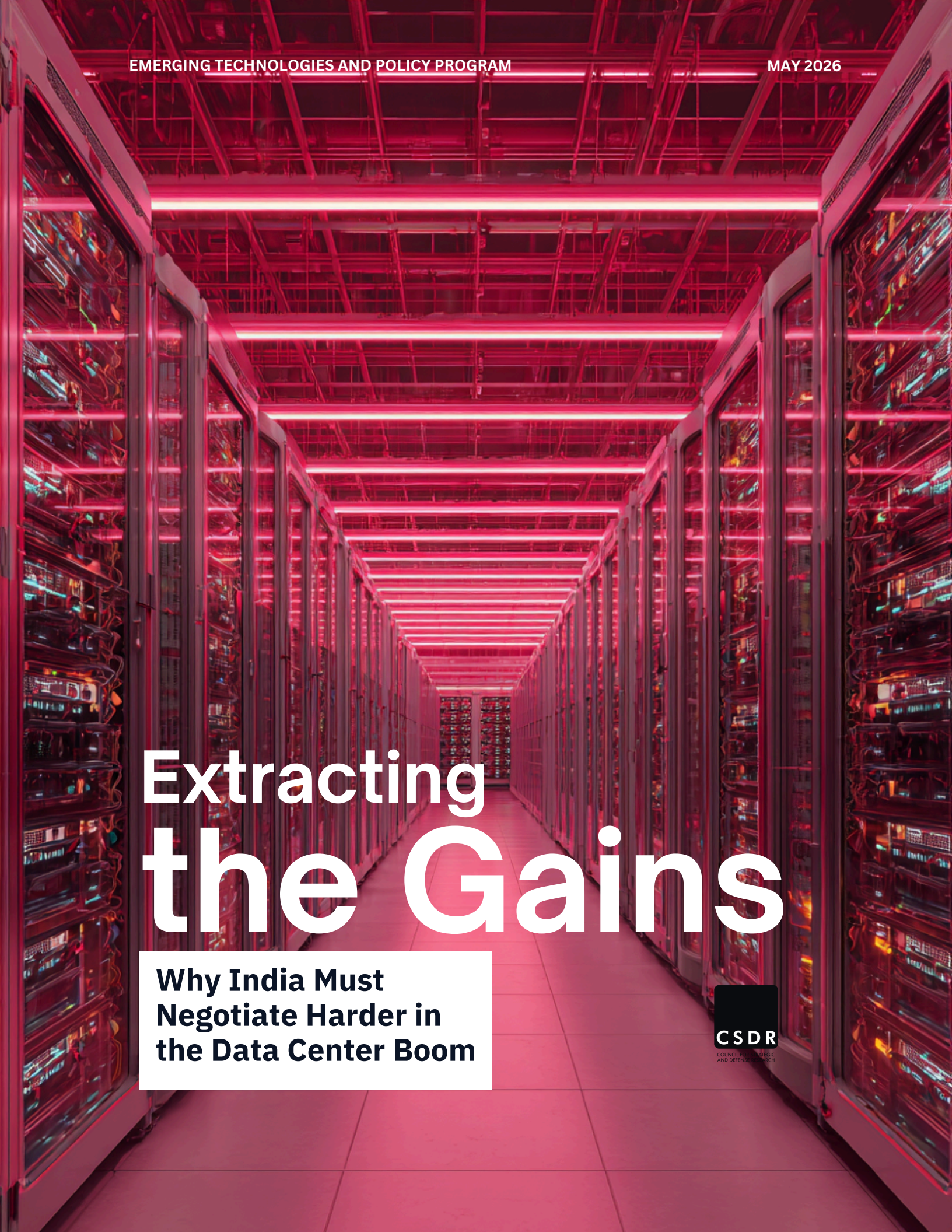

Extracting the Gains

Why India Must Negotiate Harder in the Data Center Boom

CSDR
COUNCIL FOR STRATEGIC AND DEFENSE RESEARCH

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ABOUT THIS REPORT

This report examines India's data center boom and the policy posture that has accelerated it. Over the last six months, the country has secured investment commitments worth over $300 billion from foreign and domestic firms, with nearly $100 billion of that pledged by US-based hyperscalers alone. The figure is unprecedented for a single industrial sector over such a short period, but the narrative around these commitments has run well ahead of what the underlying economics actually deliver.

The report does three things. It maps the market and policy drivers of the boom, including domestic demand, the GCC ecosystem, infrastructure status for data centers above 5 MW, a twenty-year tax holiday for foreign hyperscalers exporting their services, state-level incentive packages, and a dense maze of data localization rules. It then conducts a cost-benefit analysis that questions the dominant claims of technological sovereignty and broad economic gain. Finally, it argues that India must shift from investment facilitation to negotiated extraction, and lays out the concrete templates the government can put on the table: compute for academia, applied R&D testbeds, regional tech clusters, AI-based public service delivery, and a structured renewables and storage push.

COUNCIL FOR STRATEGIC AND DEFENSE RESEARCH

The Council for Strategic and Defense Research (CSDR) is an independent, New Delhi-based think tank providing strategic analysis and policy recommendations to governments, businesses, and institutions. Its expertise spans foreign policy, geopolitical risk, connectivity and geoeconomics, defense and aerospace, strategic technologies, conflict resolution, peacebuilding, climate change, energy security, and technology policy, with a focus on the Indian subcontinent, Eurasia, and the Indo-Pacific.

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The Emerging Technologies and Policy Program studies the intersection of advanced technologies and their wide-ranging social, economic, and political implications. Its work revolves around two primary dimensions: addressing shortcomings in the existing legal framework and developing policy and technical tools to tackle the multifaceted challenges posed by the rapid growth of the tech sector.

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EXECUTIVE SUMMARY

India is in the middle of a data center boom that has, in six months, drawn investment commitments worth over $300 billion. Nearly a third of that has been pledged by US hyperscalers (Google, Amazon, Microsoft, OpenAI). If realized, the magnitude of these inflows into a single sector, over such a short stretch, will be among the largest capital surges in the country's recent history. The Government of India and several state governments have hurried to facilitate the surge, with infrastructure status for data centers above 5 MW, a 20-year tax holiday for foreign hyperscalers exporting their services, sub-market water and electricity rates, and a dense maze of data localization rules that quietly do the rest of the work.

This report argues that the strategic and economic gains from this boom are far more limited than the announcement-day headlines suggest, and that India must move beyond investment facilitation toward a model that actively extracts a wider set of gains in return for the support it is already offering.

The tech sovereignty narrative does not hold up. India does not currently design or fabricate AI chips, and its semiconductor trajectory will not get it there in the near future. As long as the primary tech stack inside a 'domestic' AI-ready data center remains foreign, the sovereignty pitch is largely a market frame. The secondary tech-gains argument fares no better: over three-quarters of subsidized IndiaAI Mission GPUs are currently unused, and Indian AI startups overwhelmingly choose global cloud providers, not because of price but because of a lock-in mechanism that price alone cannot solve.

The economic case is similarly thin. Data centers are construction-intensive but not labor-intensive, and the GoI has already given away the primary fiscal upside through the two-decade tax holiday and a long list of state-level waivers. The financial case is shakier still: global corporate AI investment has surpassed $1.6 trillion, even as revenue remains modest among top model providers, and the dot-com era’s fiber glut is the historical analog worth keeping in mind. Resource stress compounds the financial risk. Data center power demand in India is projected to grow 900% by 2032; water consumption will more than double to 360 billion liters; and 40% of installed capacity is already in Mumbai, a city already on the climate front line.

India has real sources of leverage: a large data market, the GCC ecosystem, low compute costs, demand growth in AI adoption, US national debt at 122% of GDP, and the resource limits of US data center sites that hyperscalers might otherwise prefer. The report sets out five concrete extraction templates. Compute and R&D partnerships for Indian universities. Applied science testbeds co-financed by data center developers. Regional tech clusters that pull spillover investment into local startups and industry. AI-based public service delivery for the IndiaAI Mission and, over a longer horizon, for South Asian neighbors. A renewables and storage package that turns hyperscaler power demand into an accelerator for India's clean energy transition rather than a strain on it. The competition for limited land, water, power, and approvals will only intensify, and India's leverage grows with it.

INTRODUCTION

This report argues that the technological and economic gains from India's data center boom are far more limited than usually touted, and capital inflows into the sector do not come without financial risks and future resource stress. Consequently, India must move beyond investment facilitation and negotiate harder to extract and maximize strategic gains from Big Tech and hyperscalers in exchange for direct or indirect financial support.

Over the last decade, a rapid series of technological breakthroughs, a steep decline in computational costs, and a massive surge in data availability have radically transformed Artificial Intelligence systems and placed them firmly at the forefront of economic development strategies and trajectories worldwide. Since 2022, when OpenAI released ChatGPT, the market capitalization of 'AI-related' firms in the S&P 500 has grown by $12 trillion.[1]

As governments, corporates, businesses, and individuals rapidly integrate AI into their daily lives, hyperscalers and data center operators the world over are in a high-stakes race to build the digital backbone of an AI economy: 'AI-ready' data centers, equipped with racks of advanced chips (GPUs) and enormous storage capacity, that can support the exponential rise in demand for AI workloads (AI adoption). McKinsey estimates that capital expenditures on data center infrastructure will exceed $6.7 trillion by 2030, with $5.2 trillion for AI-ready capacity alone.[2]

To attract as large a chunk of this capital flow as possible, major countries are competing to offer policy support to hyperscalers, both foreign and domestic. These include streamlined regulations with expedited approvals for the sector, and access to land and energy infrastructure, often with subsidies attached. Over the last six months, India has made rapid progress in this contest to secure investment commitments worth over $300 billion, with an estimated aggregate of nearly $100 billion from US-based tech giants: Google, Amazon, Microsoft, and OpenAI.[3] If realized, the magnitude of both domestic investment and capital inflow into a single industrial sector, over such a short period of time, will be among the largest single-sector capital surges in the country's recent financial history.

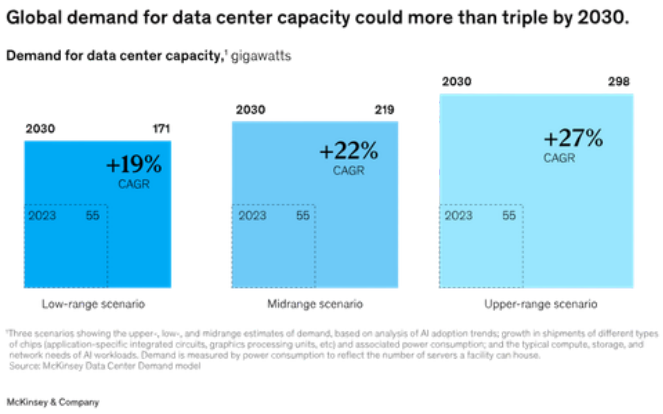
> India has secured investment commitments worth over $300 billion — but the strategic and even financial gains from this boom must be critically scrutinized.

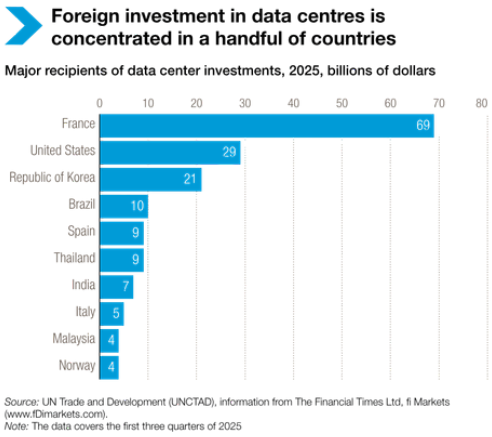
At the same time, however, the expected strategic and even financial gains from the data center boom in India are currently debatable and must be critically scrutinized if the GoI continues to subsidize the buildout, directly or indirectly (through tax incentives). The list of potential drawbacks is large: an inordinate amount of capex costs for data centers go into import of expensive and powerful GPUs (or AI chips), and a substantial chunk of opex costs involves cycles of hardware upgrades that

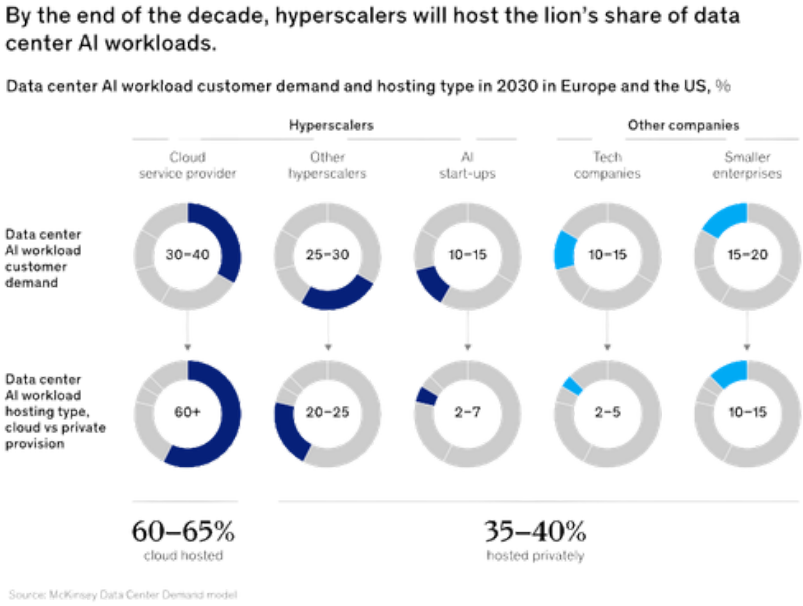
can eat into domestic value addition; the sector carries potentially enormous financial risk; data centers are also not particularly labor-intensive to run; and most importantly, they are energy and resource (fresh water) intensive to operate in a country where power grids are strained, and several regions are on the brink of 'water bankruptcy'.

On the other hand, it's also true that data centers can deliver spillover economic and technological gains if built upon an economic development model that emphasizes: the development of base infrastructure, power, and network capacity; offshore of more tech-intensive activities to India's already large collection of GCCs; a compute cost advantage for India's large AI startup ecosystem; and so on.

In this context, this report attempts to understand the drivers of the data center boom in India and the nature of policy support for the sector; provides a cost-benefit analysis of the same; and, finally, argues for the need for a data center development model that extracts maximum gains from hyperscalers to justify continuous subsidy support for the sector. Towards this objective, the report highlights initiatives, approaches, and templates adopted or underway in other jurisdictions, negotiating with data center developers, and the lessons they offer to India.







THE MARKET DRIVERS OF INDIA'S DATA CENTER BOOM

India's recent success in the global data center race can be attributed, first and foremost, to domestic demand. The country produces 20 percent of the world's data but hosts 3 percent of its data center capacity.[4] Measured per million Internet users, India's domestic data center capacity stands at just 1 MW, against China's 4 MW, the EU's 12 MW, and the USA's 51 MW.[5] This gap alone creates a market case for hyperscalers to enter the Indian market, and domestic AI adoption rates substantially enhance it. Last year, BCG estimated that 92% of Indians in the workplace, employed across a wide range of sectors, used AI weekly.[6] This marked the highest rate in the Asia-Pacific region and was well above the global average of 72%. Meanwhile, EY estimates that over 47% of Indian businesses now operate multiple GenAI use cases, with another 23% at early or pilot stages.[7]

India's IT sector is also host to over 1800 Global Capability Centers, which employ 2 million professionals. By 2030, they are likely to reach a market size of $110 billion and employ 4.5 million, as per the GoI's STPI GCC Report.[8] The case for AI-ready data center capacity is thus strengthened by the need to support this rapid expansion, especially as GCCs emerge as key consumers of agentic, AI-driven enterprise solutions to achieve cherished productivity gains within their labor force. Moreover, data center investments in India come at a time when fears of an AI bubble have swept across global markets, and in this context, the view of top global brokerages, such as Jefferies and HSBC, is that India offers a "hedge and diversification" for those uneasy with the AI rally, primarily in the US.[9] Given that stocks of Indian AI-tech companies have trailed far behind global competitors, despite a large and skilled talent pool and high rates of AI adoption, data center infrastructure in the country is seen as a relatively safer bet globally, and more broadly, financial analysts believe that India should be able to outperform other (more leveraged) markets if the AI bubble bursts.

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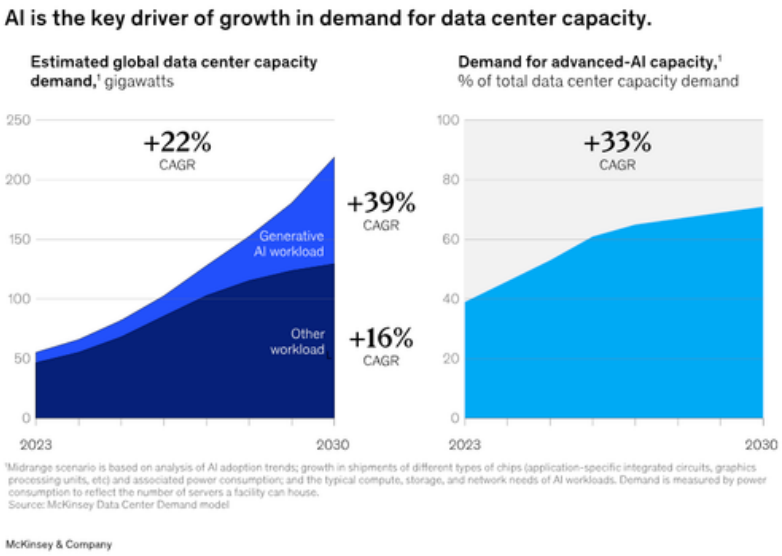

THE POLICY DRIVERS

Beyond market logic, the data center boom in India is driven by policy support and considerable financial incentives from both the GoI and state governments, who, in turn, are motivated by the pursuit of big-ticket investment-commitment headlines as well as real and perceived technological and economic spillover gains.

As early as FY 2022, the GoI accorded infrastructure status to data centers with a capacity above 5 MW, enabling operators to access low-interest rates on long-term credit.[10] More recently, the GoI released a new draft National Data Center Policy (NDCP), which proposed, inter alia: a 20-year tax holiday for players who can add at least 100 MW capacity, as well as GST input tax credit for capital assets (construction equipment and coolant systems, etc.)[11] In the latest budget for FY 26, both proposals were adopted.[12]

Importantly, however, the two-decade tax break is reserved exclusively for foreign tech companies that operate data centers in India to provide services to overseas customers.[13] The exemption doesn't apply to services offered to Indian clients, which will continue to be taxed.

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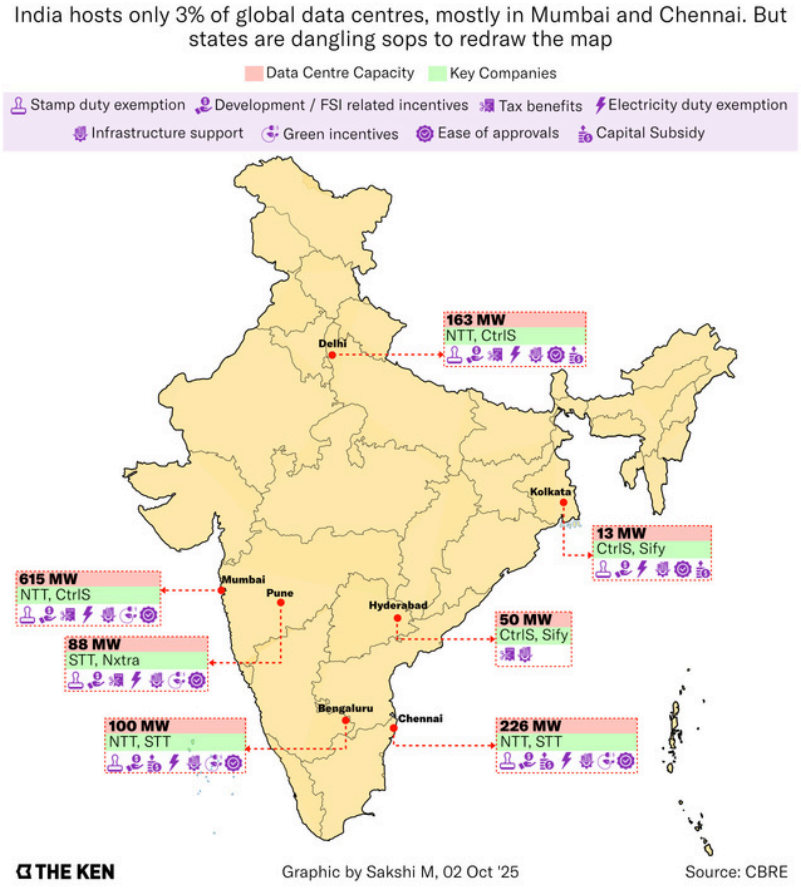
Meanwhile, many Indian states, in fierce competition with one another, have launched their own policy support frameworks and announced plans to establish ‘AI hubs’ within their jurisdictions. To attract a Google data center project, for instance, the Andhra state government reportedly approved fiscal incentives of Rs 22,000 crore (approximately $2.5 billion).[14] Other major Indian states, such as West Bengal, Uttar Pradesh, Karnataka, and Tamil Nadu, have offered a mix of land-acquisition subsidies, electricity duty exemptions, incentives for renewable energy addition, stamp-duty exemptions, and so on.[15] Maharashtra’s IT and ITES policy (2023), for instance, recognizes data centers as an “essential service,” thereby making them eligible for a 100% electricity tax exemption and exempt from stamp duties on the purchase of land.[16]

Apart from direct and indirect financial incentives, another policy lever in play is a complex maze of data localization laws. In 2018, the Reserve Bank of India mandated that all payment data must stay within the country’s national boundaries.[17] In 2023, Sebi instituted a local storage rule for financial entities but has since held off on implementing it.[18] The same year, the Digital Personal Data Protection Act empowered the GoI to restrict cross-border data flows more broadly.[19] Although, as per the latest DPDPA rules notified last year, India has placed limited restrictions of the latter kind, the overall data regulatory framework in India still implicitly rewards both foreign and domestic operators to build capacity at home.

The current wave of data center policies in India reveals a simple strategy of investment facilitation by both the GoI and state governments.



THE ERRONEOUS ASSUMPTIONS BEHIND STRATEGIC GAIN AND COST-BENEFIT ANALYSIS

India's efforts to attract a large share of global data center investment are ultimately informed by two key narratives of strategic gain. First, that data centers come attached with (primary and secondary) technological gains that will give the country an advantage in the strategic AI race. Second, data centers generate quality employment and spur local economic development. However, neither of these assumptions withstands critical scrutiny, as reality is far more complex.

THE MYTH OF TECH SOVEREIGNTY

To begin with, India does not currently fabricate or design any 'AI chips' or GPUs, and based on current trends in India's semiconductor trajectory, it will be several years, if not decades, before

it achieves the technological readiness levels needed to do so. Until India gets there, and contrary to popular belief, the proliferation of data centers does not help upgrade the country's base technological capabilities (unlike the subsidization of domestic semiconductor production, for instance). This is because a sizeable chunk of the capex cost to set up an 'AI-ready' data center, as much as 40-50%, goes into the import of expensive and powerful GPUs from US-based chip giants, and a large portion of opex costs involve subsequent hardware upgrades that eat into domestic value addition.[20]

As long as the primary tech stack in a 'domestic' AI-ready data center remains foreign-made, it undermines any meaningful argument for AI sovereignty. In fact, the tech 'sovereignty' claim itself has fast emerged as a market pitch for hyperscalers rather than a verifiable strategic goal. Take the example of Indian AI-cloud startup Neysa, which raised $1.2 billion in February this year to deploy what it calls "sovereign" compute – around 20,000 GPUS bought from US chip giant Nvidia.[21] As a senior engineer at Neysa admitted, "Sovereignty here means operational and jurisdictional control, not technological independence."[22] Equally telling, roughly half of Neysa's recent fundraise was equity from global investors like Blackstone, and the other half was debt.

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COMPLICATIONS IN THE LOGIC OF TECH GAINS

Even the argument for secondary tech gains – that a lack of domestically available compute power constrains India's AI journey and thus requires more data centers to get started – is more complicated. If data centers, through localized infrastructure, can deliver a cost advantage to AI startups hungry for compute, then it makes sense. At present, however, whether this kind of market logic exists is an open question.

More than three-quarters of the subsidized GPUs made available to AI startups and researchers by the IndiaAI Mission are currently unused, despite the low compute cost.[23] Meanwhile, E2E Networks – India's first domestic cloud provider, backed by infra and tech giant L&T – has seen its GPU utilization rates fall sharply in recent quarters.[24]

> More than three-quarters of the subsidized GPUs made available by the IndiaAI Mission are currently unused, despite the low compute cost.

The reason for this underutilization is two-fold. First, the cloud is ubiquitous, and neither Indian AI startups that develop AI solutions nor enterprises that deploy them necessarily need domestic data centers, even though geographical proximity certainly helps with latency and redundancy issues, and data sovereignty is another matter altogether.

Second, and much more importantly, market considerations behind AI development can depend as much (perhaps more) on cloud ecosystems as on the cost of compute. If an AI product is developed on a single stack or cloud architecture, it can become costly and technically complex to migrate the model to another stack, such as the one where the client's database resides.

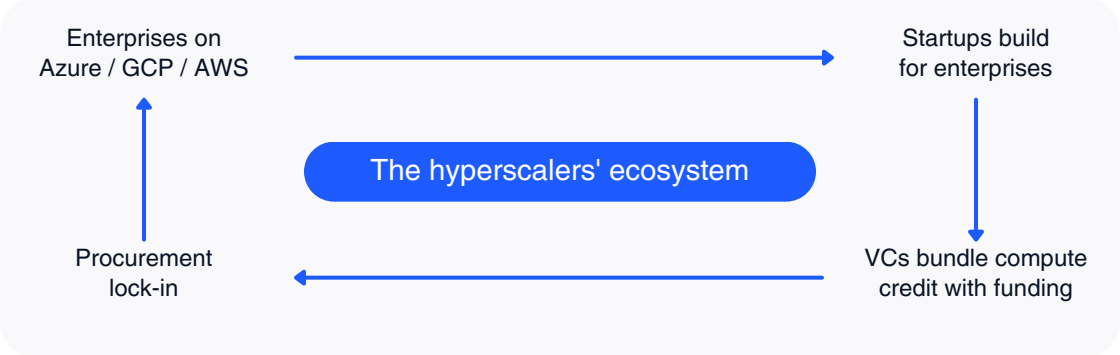
Therefore, developers tend to build on established, popular cloud infrastructure, as enterprise deployments move faster when they are within a single system. As an Indian AI startup founder explained, “We don't optimize for the cheapest GPU. We optimize for where the customer already runs.”[25]

Indian AI startups are likely to choose global cloud providers over domestic systems, not just because of superior service at scale, which also meets data-compliance requirements in the country, but because of what one prominent AI observer calls “the lock-in mechanism that price cannot solve.”[26] Already, VCs or startup accelerators (such as Y Combinator or Techstars) have formed a range of mutually beneficial partnerships with cloud providers. It's very common for cloud credit bundles (from Microsoft Azure, Google Cloud, or Amazon AWS), often worth tens of thousands of dollars, to be regularly attached to VC funds for a startup.

> Indian AI startups choose global cloud providers — not because of price, but because of 'the lock-in mechanism that price cannot solve.'

Finally, the excessive focus on domestic compute infrastructure also distracts away from the far more vital issues faced by India’s AI ecosystem today, such as a lack of domestically built and competitive frontier models that compel nearly all of the roughly 900 GenAI Indian startups to build on applications and services on top of licensed foundational models developed by Big

In a loop



Tech abroad, or on open-source models. This dependence on 'foreign' AI is, in turn, the result of an even deeper problem – a severe lack of capital. Last year, Indian startups raised just over $1.3 billion, just 0.6% share of the global AI pie.[27] (For further context, OpenAI alone raised $122 billion in the last financial year, even as it remained an unprofitable business.)[28]

There are other, more fundamental challenges (outside the scope of this report), such as the outward migration of top AI talent from India and the country's abysmal R&D expenditure rates, that curtail AI innovation far more than a lack of domestic data centers. Such debates raise critical questions about the policy priority ostensibly accorded to the data center sector in India, given limited policy energy and financial resources amid a sea change in the global technological landscape and the country's urgent need to catch up in the strategic AI race.

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ECONOMIC BENEFITS ARE A MIXED BAG

Amidst a backdrop of aggregate FPI outflows and a slump in FDI inflows (which turned a rare net-negative in August last year), high-profile FDI commitments into India by tech conglomerates are certainly welcome. Yet, in the absence of any technology transfer, the broader economic benefits of a data center buildout are also debated, even though there are

second-order economic benefits (digitization and AI readiness) for GCCs and Indian enterprises. This assumes significance in the context of sector priorities and government support, rather than market demand alone.

To begin with, data centers may create tens of thousands of jobs in their initial phase, namely, the construction of primary and support infrastructure, but are not particularly labor-intensive to run once they are built. The U.S. Chamber of Commerce's Technology Engagement Center has documented this trend with supportive data and shown that the economic benefits of a typical large data center decline substantially after the construction phase.[29]

For instance, some 1500 people were employed to build the first data center for OpenAI's Stargate project, but the facility is expected to have only about 100 full-time employees.[30] As the Chief Executive of a data-center operator admitted, "Data centers have rightly earned a dismal reputation of creating the lowest number of jobs per square foot in their facilities."[31] In a low-wage country like India, where construction jobs are far from 'quality employment', the buildout also poses questions over economic benefits beyond mere job sustainability.

> 1,500 construction jobs to build OpenAI's Stargate — but only ~100 full-time employees once it's running.

Arguably, the primary economic benefit of a data center may well be the tax revenue generated (land tax, electricity duty, etc.) over several years or decades. Yet the GoI has declared a 20-year tax holiday for foreign hyperscalers that export their services. State governments have waived off many other kinds of local taxation. This may be a calculated risk to install as much domestic capacity as possible. Still, in the short- to medium-term, it also incentivizes hyperscalers to focus on foreign markets, which, in turn, can further limit economic interactions with the Indian market and dilute even second-order benefits.

Construction versus operational jobs from data center development

Study	Construction Jobs (one-time)	Operational Jobs (ongoing)
PwC (2023)	1,000-10,000	50-300
JLARC (2024)	3,000-5,000	100-400
Sage Policy (2024)	~2,000	~200
Thompson (2019)	~1,200	100-150
Morrow County (2024)	~1,500	80-120

Source: Adapted from multiple economic impact studies compiled in Michael J. Hicks, "Data Centers and Local Job Creation." Brookings Metro.
Note: Estimates vary by project scale, location, and reporting conventions.

FINANCIAL RISKS

In parallel, the risk of data center overcapacity in India (and globally) looms large, and current demand indicators (such as those mentioned above for GPU underutilization) are hardly cause for confidence. As a prominent Indian AI journalist recently wrote, “The country’s problem isn’t just the shortage of demand, but also that whatever little demand exists is captured elsewhere.” [32]

Much of data center construction in India will be facilitated by cheap credit, due to policy support, which is necessary given that gestation periods to turn a profit are measured in several years, not months. This timeline, however, exposes the country to significant financial risks, given fears of an AI bubble.

The concern here is broad and arguably beyond the control of any government, since the financial viability of investment commitments in the AI sector, relative to the revenue generated by AI products and services, has yet to be tested. Total global corporate investment into AI has surpassed $1.6 trillion over the last decade.[33] In the last financial year, private equity and venture capital alone invested over $330 billion in AI products (excluding data centers).[34] But key AI players such as Anthropic and OpenAI have yet to turn a net profit and expect losses to mount in the near term due to heavy compute spending.

Since the business models of a new generation of ‘AI-ready’ data centers will be centered upon the success of AI firms and the net demand generated by their products, the directly transferable risks of an AI bubble scenario into the data market are self-evident, especially as top tech firms themselves are increasingly exposed through their large stakes in the AI infrastructure buildout.

As hundreds of billions of dollars are committed to ‘AI-ready’ data centers in India, the country’s exposure to financial risks inherent in an AI bubble scenario grows in proportion. Despite the high-profile optimism evident in the push for AI-ready data centers by top tech executives, consultancies, and even governments worldwide, a lack of short-term demand could jeopardize much of India’s ambitions in the sector.

> Data centers are to AI what optical fiber cables were to the Internet — and in the 1990s, the 'fiber glut' coincided with the dot-com bust.

Such a scenario is not without instructive historical precedent. Data centers are to AI what optical fiber cables were/are to the Internet, and in the 1990s, the “fiber glut” phenomenon was closely associated with the dot-com boom. At the time, tech corporations, industry analysts, and even the US Department of Commerce loudly proclaimed that the internet was doubling in size every 3 months or so (an implied annual growth rate of 1,000 percent). As a result, several companies invested billions of dollars to lay down millions of miles of fiber-optic cables across seas and oceans, in an attempt to keep up with presumed exponential demand that never materialized.[35]

In March 2000, the bubble burst, and over the next two years, the NASDAQ fell by over 75%, wiping out more than $5 trillion in market value. In 2002, just 2.7 percent of the installed fiber capacity was in use, as actual traffic growth was nowhere near expert forecasts. The demand did come, much later, but in the interim, almost all of the companies involved in the buildout of optical fiber cables were left in financial ruin.[36]

RESOURCE STRESS

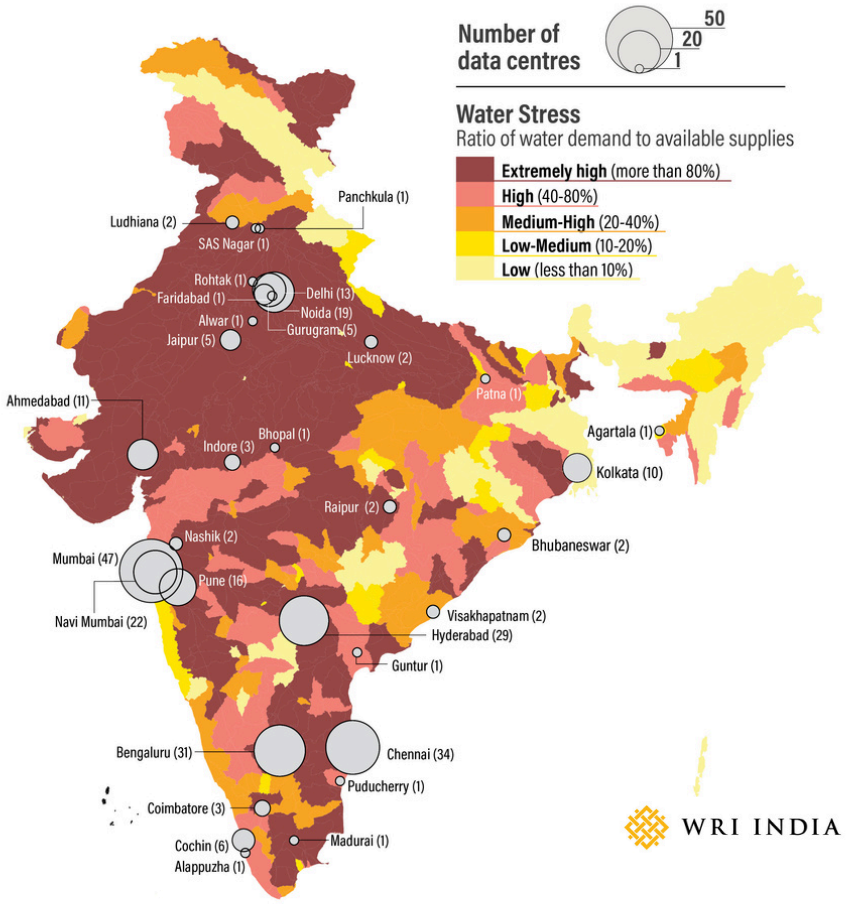
Even as India takes on greater financial risks for little strategic and seemingly modest economic benefits, resource constraints within the country will simultaneously stress-test the data-center boom. Data centers are known to devour power and guzzle water (as coolant for the heat they generate), and those with AI-heavy workflows do so with a multiple of that intensity.

According to Deloitte’s latest report, the share of data centers in India’s total electricity demand, currently 0.8%, could rise to 3% by the end of this decade.[37] Put differently, India’s net power demand between now and 2030 is expected to grow at roughly 5%, but demand from data centers is expected to grow at over 28%.[38]

Meanwhile, water consumption by data centers is likely to more than double from 150 billion liters last year (projected) to 360 billion liters by 2030, which is no small number in a country where 600 million people experience ‘high to very high’ water stress and large chunks of the country are on the brink of “water bankruptcy”.[39] In fact, according to Moody’s Ratings, India's average annual water availability per capita is likely to drop to approximately 1,370 cubic meters by 2031, down from an already low 1,490 cubic meters in 2021, which is detrimental to the overall credit health of the Indian economy.[40]

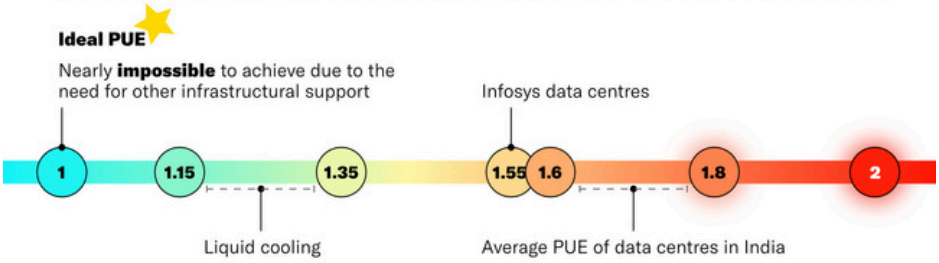
> Data-center water consumption is projected to more than double — from 150 billion litres to 360 billion by 2030 — in a country where 600 million already face high water stress.

Five states—Maharashtra, Tamil Nadu, Karnataka, Telangana, Uttar Pradesh—account for 75% of the country's 278 data centres, which require large amounts of water for cooling.



The power-usage effectiveness (PUE) of a data centre is a measure of how effectively its servers are being cooled

$$\text{Power-usage effectiveness (PUE)} = \frac{\text{Total amt. of power used by data centre}}{\text{Amt. of power used for IT systems (computers)}}, \text{ where } 1 \le \text{PUE} \le 2$$



THE KEN Graphic by Aishwarya N, 11 Nov '24 Source: The Ken research

Worse still, the development of data centers is likely to strain regional power grids and water resources in precisely those areas that are already stretched by consumption. For instance, access to undersea cables is a leg up in the data business; consequently, Mumbai hosts 40% of India's operational data center capacity, and Chennai hosts another 20%. A majority of new projects are similarly planned across cities.[41]

Resource constraints have derailed large infrastructure projects in India before. At some point, they will also morph into political challenges for regional leaders, as they already have in many other countries.

INDIA NEEDS A MODEL TO OPTIMIZE BENEFITS THROUGH EXTRACTION

Until this point, this report has deliberately emphasized an overtly critical analysis of the data center boom in India. It has listed the drawbacks and risks associated with the current data center development model. The purpose of this exercise is not to challenge whether India needs data centers. It certainly does, although exactly how many is perhaps a question best left to the market's wisdom. In any case, the GoI appears convinced that spillover economic and technological gains from data centers are adequate to warrant a sustained policy push, and states will similarly continue to compete for investment.

The purpose behind the critical emphases instead is to strengthen the core argument of this report: Since technological and economic gains from the data center boom are far more limited than usually touted, and capital inflow into the sector does not come without financial risks or future resource stress, India must extract and maximize strategic gains from Big Tech and hyperscalers in exchange for direct or indirect financial support.

SOURCES OF LEVERAGE

To do so would first require an assessment of the country's sources of leverage in the tech industry, and this report has already implicitly identified some of them. India's large data market, its large pool of IT hubs and GCCs, and high adoption rates are all incentives for a tech sector in perpetual, high-stakes competition with itself. As geopolitical contestations with China increasingly spill over into the technology domain, India has already begun to emerge as an irreplaceable consumer of US tech (e.g., GPUs), and it further offers cheap labor and land for construction (both key factors in fresh capex investment considerations).

Meanwhile, the need for investors to diversify AI-related financial risks into other markets assumes even greater significance in the context of US national debt (which at over $38 trillion has reached more than 122% of GDP — the highest peacetime ratio on record).[42] Even on the

resource front, the US electricity grid has largely remained stagnant (it recorded nearly net-zero demand growth for nearly two decades), and the buildout of data centers has pitted local communities against operators, with clear political costs.[43] In contrast, India's electricity market has witnessed rapid growth and impressive rates of renewable energy additions.

All of these are sources of leverage already, and when coupled with the GoI's and state governments' offers of land subsidies, electricity duty exemption, and, most importantly, a two-decade tax break, they place India in a comfortable position to demand gains from the global tech industry. Having leverage and using it, however, are distinct challenges. Yet there are multiple opportunities and templates that, if creatively adopted, can offer significant benefits to both India's economy and the participating tech firms' businesses.

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THE TEMPLATES AVAILABLE TO INDIA

India's basic strategy at present, as hinted at in the GoI's draft data center policy, is: "Eligible firms may be nudged to set up AI development centers or global capability hubs in the same city as their data facilities."[44] Here, eligible firms include Google, Microsoft, Amazon, OpenAI, Meta, and other Big Tech firms that have direct and indirect stakes in the global data-sector buildout. However, India can move from tech firms "may be nudged to set up..." to 'tech firms must offshore greater tech-intensive activities and AI knowledge and capabilities as a precondition to financial support for their data centers.'

Such a shift in India's approach would not come without risks. In particular, excessive demands or regulation can drive Big Tech away to other jurisdictions, which are in intense competition with India to attract their investment. To some extent, India's uniquely large data market, the current and potential scale of its AI adoption, and its geopolitical alignment with the West can

mitigate this prospect. Nevertheless, India must use its sources of leverage creatively, avoid overplaying its hand or making unrealistic demands, and, more importantly, adopt data center development templates that emphasize mutual benefits for India and Big Tech.

> India can move from tech firms may be nudged to set up AI development centers, to firms must offshore tech-intensive activities as a precondition to financial support.

To do so would not make India an outlier. In fact, efforts are already underway in the US and elsewhere to extract tech and economic benefits from data-center developers, who have pledged positive spillover effects anyway, to justify their resource-heavy buildouts to local communities politically.

In India's context, global tech firms have already pledged support to the IndiaAI mission, and the scale of planned investments also suggests that capital will naturally flow into other segments of the AI value chain. What the GoI needs to do now is lay out (and demand) precisely what kind of support it needs to strengthen India's AI ecosystem. Here again, negotiations among data center operators, policymakers, and leaders in the US to move from a standard facility-construction model to an AI-ecosystem construction model offer a worthy template. Arguably, India can simply replicate and extrapolate many such approaches nationwide.

COMPUTE RESOURCES AND R&D PARTNERSHIPS FOR INDIAN ACADEMIA

To begin with, India can secure abundant AI compute resources for its academic institutions in exchange for support to hyperscalers, and/or enlist tech firms for R&D or academic partnerships with universities and AI research institutions.

While some such initiatives are underway in India as well, they can be significantly scaled up, and new initiatives can be launched with the help of tech firms involved in the data center sector. For example, Indian universities and technical institutes can participate in AI players' large fundraisers, request start-up incubators, and request early access to frontier models for their researchers. Meanwhile, the collaborative involvement of AI leaders in Indian

For instance, in the US, OpenAI, in exchange for expedited permits, has promised to make "meaningful amounts of compute" available to public universities, as well as to foster local AI research labs and train a homegrown AI-skilled workforce. The US Department of Energy has promoted the accelerated development of data centers on land owned by national laboratories to enable research labs to use the developer's AI infrastructure.[45]

The state of Wisconsin offers a particularly useful template. In parallel to its pursuit of a massive data center in the state, Microsoft has partnered with the University of Wisconsin-Madison to accelerate scientific research through its AI-driven Microsoft Discovery platform – an agentic AI tool built for R&D;[46] and also launched an AI co-innovation lab on the campus of University of Wisconsin-Milwaukee targeted at AI adoption in

universities and broader domestic skill development programs can yield significant benefits for the country's AI research community and workforce.

THE TESTBED MODEL

An even more ambitious approach could involve launching testbeds for applied sciences and R&D – co-financed by data center developers in partnership with the GoI and state governments. The GoI can similarly facilitate partnerships between hyperscalers and enlisted Indian universities and AI startups that wish to focus on compute-intensive applied sciences or R&D. Beyond data-intensive scientific projects, such initiatives can also support the data center sector itself. For instance, opportunities exist in new coolant technologies, research in advanced materials used for AI hardware (data center components and subcomponents), renewable energy, quantum-enabled compute technologies, and so on.

Meanwhile, startups can collaborate with and build upon the largely proprietary models created by AI giants. Such an approach can also be mutually beneficial, as it actively connects Indian AI talent with global AI businesses and helps validate AI applications (built by Indian startups) on top of frontier AI technologies (from foreign tech firms) before they are deployed in the Indian market. In other words, successful pilots can help both hyperscalers adopt new technologies faster and Indian AI startups create new products.

INSTILL COMPETITIVE ADVANTAGES INTO LOCAL INDUSTRY VIA TECH CLUSTERS

India can leverage the data center gold rush to support the creation of tech clusters that strengthen local industrial capacity and workforce development through partnerships and targeted AI adoption.

In India, where local startups are often rich in tech talent and potential but chronically starved of capital,

the production sector (which has already helped several dozen Wisconsin companies to use AI for development). Meanwhile, Microsoft has launched the state's first Datacenter Academy to train more than 1,000 students in five years for high-demand data-center roles, and partnered with over 40 entities (universities, technical institutes, and companies) to train hundreds of thousands of Wisconsinites in AI skills more broadly.[47] In fact, the tech leader has launched such initiatives across large US states.

Similar examples of efforts to enlist top tech firms in AI skill development initiatives now exist across several states in the US and elsewhere. The UK government, for instance, has teamed up with Google, Microsoft, Amazon, Salesforce, and others to launch a mammoth initiative to upskill 10 million workers (or a third of the UK's workforce) by 2030.[48]

In the US, efforts are underway to build a Massachusetts AI Hub, with $100 million of committed support via state legislation, and a separate initiative within the act has launched a testbed data center built in partnership with the MGHPCC, the AI industry, and six universities in the state (Harvard, MIT, Yale, and Boston University included). Thetestbed will foster innovations in solar energy for data centers, new coolant technologies, and so on. Notably, the MGHPCC – an inter-collegiate collaborative research platform – already operates a data center to support a large number of compute-intensive advanced scientific research projects by the universities. Similar initiatives are in the works across states in the US.

The testbed model has also gained considerable traction in the UK and across Europe. For instance, the UK has created AI Growth Zones, where cross-sector partnerships are facilitated in conjunction with free or discounted compute resources. London has also invested in efforts to incorporate Quantum Technologies into data centers through the testbed model. The EU has created startup-support programs via state-sponsored compute facilities and focused on commercial deployments that emphasize collaboration between European startups and US-based AI firms. OpenAI and the Greek government have even signed an agreement to co-develop an AI accelerator program with the help of OpenAI model credits and technical support.

targeted spillover investments can go a long way toward creating vibrant tech clusters. Beyond investments, collaborative R&D partnerships with tech giants to develop tailored AI solutions, or talent development programs for startups focused on AI skills, can be equally meaningful.

Apart from startups, emphasis can also be placed upon industrial sectors where the potential for collaboration is strategically significant. For instance, renewable energy companies in India can partner with (or be partially funded by) hyperscalers to develop and deploy carbon-neutral power sources for data centers, in line with operators' net-zero commitments. The Indian auto industry can benefit from collaborations that build custom AI models for automated vehicles, or even AI adoption in other auto services. Indian cybersecurity firms can tailor partnerships to develop and deploy AI-based anti-malware and other protective tools.

One broad logic in play here is to expand AI use cases within local industries to drive regional innovation and productivity gains. The GoI or state governments can re-tailor subsidies and incentives to support mutually beneficial partnerships between Indian companies and foreign tech-firms.

DELIVER STATE SERVICES VIA AI WITHIN INDIA AND ELSEWHERE

Another opportunity to explore is enlisting tech firms to develop and deploy AI-based service delivery for government programs in exchange for support with data center development.

The GoI's IndiaAI Mission already has an Application Development Initiative as one of its seven pillars, with the declared objective of building AI solutions for "India-specific challenges" in sectors such as healthcare, agriculture, and edtech.[54]

In the state of New Jersey, USA, the former Governor has passed state legislation that offered AI companies, interested in mega data-center deals, up to $250 million in tradable tax incentives in return for similarly sized investments back into local tech clusters. One aim of this legislation is to foster collaborative partnerships "between an eligible business [for instance, an AI infra company]... and a (1) New Jersey-based public or private research university or universities; (2) [New Jersey-based] technology startup company or companies; or (3) [New Jersey-based] incubator(s), accelerator(s), [or] studio(s)."[49]

In essence, this is a win-win strategy. As a Brookings report pointed out, "In practice, the [New Jersey] governor receives a pool of flexible economic development funds that he or she can redirect to high-priority areas (without a new piece of legislation), while the AI company secures an invaluable tax credit and public relations benefits, making them feel like winners in the process too."[50]

This strategy has already started to yield dividends. For instance, the cloud-compute firm CoreWeave, which is involved in multiple data center projects in the state, has started an NJ AI Hub in partnership with Princeton University, Microsoft, and the New Jersey Economic Development Authority (NJEDA).[51] As part of this effort, it has invested $20 million in tech startups.

In Wisconsin, while not explicitly negotiated, Microsoft has also committed multiple levels of investment for workforce development, to support manufacturers, and more directly into local tech startups within the state.

One approach could involve Indian AI firms, with access to government data under strict regulatory oversight, building welfare service-delivery applications on top of a proprietary frontier model from an AI leader (with stakes in the data center sector). If privacy and security concerns can be reasonably overcome, foreign tech leaders can even be enlisted to build AI models trained on Indian datasets in exchange for access to large Indian datasets. Over time, such models could create a multiplier effect as Indian AI players use them to build public-focused AI solutions or even for commercial AI applications.

Finally, and while more ambitious, India can even ask (perhaps over a longer term) and partner with domestic data center developers to launch its own, more limited version of PGIAI regionally. For instance, it could launch an initiative to provide computing credits and other support to South Asian countries and other regions in the Global South.

Although disconnected from its efforts to attract data centers, the state government of Maryland, USA, has partnered with Anthropic and the Rockefeller Foundation to deploy proprietary AI tools inside its state agencies.[52] These extend to multiple areas of service delivery with special focus on healthcare programs.

At the federal level, the Partnership for Global Inclusivity on AI (PGIAI), announced in 2024, is another relevant example, even though its current operational status under the new Trump administration remains unclear. Under a public-private partnership framework, the US State Department and Big Tech had banded together to commit $100 million and to leverage their "collective expertise, resources, and networks to unlock AI's potential as a powerful tool for sustainable development and improved quality of life" in third countries. While largely shaped by Washington's diplomatic objectives at the time (for instance, it includes earmarked foreign assistance to promote AI as a tool to advance democracy and human rights), the initiative also focused on global AI governance, the SDGs, and capacity. For example, the initiative conceived of modest transfers of AI compute credits to close the 'AI access gap,' AI skills programs, and technical assistance with AI-based service delivery by governments.[53]

SCALE UP RENEWABLE ENERGY ADDITION THROUGH REGULATION AND NOVEL INNOVATION

Hyperscalers in India can also be enlisted to help accelerate India's clean energy transition through renewable energy adoption and technology development, as a means to offset their resource-intensive operations.

As Power demand for data centers in India is projected to increase by 900% in the next half-decade (from 1.5 GW presently to 13.5 GW by 2032), the GoI must ensure that renewables meet this demand growth to the maximum extent possible, and India can leverage the data center boom in innovative ways to do so.[62]

> Power demand for data centers in India is projected to grow 900% in the next half-decade — from 1.5 GW today to 13.5 GW by 2032.

To begin with, the lack of adequate battery storage capacity has arguably one of the greatest short-term challenges for India's energy security at present, as it limits grid integration and leads to cost overruns. Last year, at peak hours, on some days, nearly 40% of India's solar power output was denied access to the national grid (even as it pushed the cost of electricity to near-zero, although this figure excludes longer-term purchase agreements signed between producers and distributors, through which most of India's electricity is distributed).[63] A quick fix could involve mandating that hyperscalers add excess storage capacity (beyond their own consumption) as part of data center deals, and the GoI could add additional policy incentives to sweeten the arrangement.

Some such incentives already exist under the Ministry of Power's Energy Storage System (ESS) policy framework, which includes provisions for viability gap funds, waivers on inter-state transmission charges, and a PLI scheme for Advanced Chemistry Cell (ACC) Battery Storage.

The list of possible innovative solutions, both technological and regulatory, is lengthy. India's data center policy has already conceived of small modular reactors installed near data centers to power them. With the passage of the SHANTI Bill, the GoI can now invite US nuclear energy firms (and, over the longer term, domestic firms) to participate in data center projects.[64]

At the technological level, the GoI can encourage partnerships between tech firms and domestic energy companies to explore opportunities in geothermal energy and other clean sources through pilot programs or R&D projects. AI-based grid-stabilization platforms in data centers and elsewhere are another obvious area for work. The GoI and state governments can conceive innovative finance models to share the costs and risks of such initiatives.

The EU has launched multiple efforts to drive data centers towards sustainability. Under its 2023 Energy Efficiency Directive, data centers must report on energy consumption, power usage effectiveness (PUE), water usage, and renewable energy consumption. More recently, the European Commission has announced plans to propose a Data Center Energy Efficiency Package, which aims to make all new and existing data center projects carbon-neutral by 2030.[55]

In the US, state governments have launched initiatives, and tech firms have made expansive voluntary commitments to use green energy in data centers. For instance, Pennsylvania tied data center projects and grid modernization efforts into deals worth $90 billion last year.[56] Meanwhile, Nvidia and Anthropic have partnered with energy companies and the US Department of Energy to drive innovation in renewable energy technologies. To take a specific example, in Virginia, Nvidia has partnered with the startup Emerald AI to launch an innovative pilot program for electricity grid stabilization as part of a new data center project, in which Emerald AI's software will shift AI workloads downward during periods of high grid stress.[57]

In Nevada, Google has tied up an energy startup, Fervo Energy, to launch a first-of-its-kind energy project (now operational) that can harness up to 3.5 GW of geothermal power and feed it into the local grid that powers two of Google's data centers.[58] The pilot program also involves an innovative new finance model (rate structure), known as the Clean Transition Tariff, and the development of apprenticeship programs with a local university for knowledge spillovers.[59]

Similarly, in Illinois, a utility firm, ComEd, has taken up a project with the state government's economic development agency and other regulators to create a new tariff model, where data center projects make higher deposits and post collateral in case loads and revenues don't materialize as planned.[60] In exchange, data center projects can get fast-tracked approvals. Separately, the Federal Energy Regulatory Commission in the US has called for large grid operators to incorporate enhanced load forecasts and demand flexibility measures from data centers.[61]

The GoI can offer expedited approvals in exchange for extensive commitments from data centers, such as reduced energy usage at peak hours, investments in AI-driven technologies to shift loads and other proposed testbeds to incubate and stress-test new solutions, market commitments, and conditional power purchase agreements with domestic clean energy firms and startups, and so on. Almost all such approaches can be initiated at the state-government level and scaled up over time in phases, given the long gestation periods in the data center sector.

CONCLUSION

For the foreseeable future, AI infrastructure will undoubtedly continue to emerge as a strategically consequential feature of the global economy. Yet it's also true that there is a large mismatch in gains between the tech industry and the broader economy, so much so that the sector itself could become a liability. To avoid such a scenario, it's pertinent to develop models of data center development through which a broader set of technological and economic gains can be shared in a mutually beneficial manner. Moreover, the strategic and policy approaches adopted for the AI infrastructure sector today will set precedents and create (positive and/or negative) ripple effects across the future.

This report focuses on India's need to go beyond investment facilitation for data centers and negotiate more effectively to secure broader benefits from Big Tech's foray into the data center sector in India. It has attempted to highlight and stress some concrete templates and examples of the same – 1) compute resources and R&D support for Indian academia; 2) promotion of the testbed model within India's tech ecosystem; 3) partnerships with local industry that foster competitive advantages via tech clusters; 4) assistance in delivery of state services via AI; and finally, 5) avenues to scale up renewable energy addition.

Indeed, the list of potential innovative benefits that can be extracted from AI companies with vested interests in data center development, and by extension, from AI itself, is theoretically endless, given the technology's general-purpose nature and the deep pockets of the industry leaders.

To realize the same, India must recognize its current and seek new sources of leverage to do so. In any case, as the high-stakes competition for limited land, incentives, power, water, and even harder-to-win approvals intensifies within the country, India's leverage to extract gains increases with it.

At the same time, however, the GoI should proactively design new approaches to anticipate and prepare for the sector's future trajectory. Recently, two prominent tech startups in India – one in the space sector, Pixxel, and one in the AI sector, SarvamAI - have banded together to launch an orbital data center into space (that can be powered by solar energy and cooled by the vacuum of space itself).[65] Such efforts are at an advanced stage of experimental deployment worldwide. Meanwhile, China has begun developing and deploying sophisticated underwater data centers.

India can ill afford to fall behind in this technologically vital race and must leverage its talent and resources to catch up and build. Quite apart from India's enormous AI development and adoption potential, competitive advantages exist in the (AI-ready) chip design sector (where 20% of the global skilled workforce is Indian), and other opportunities exist in novel renewable energy and (non-water-based) coolant technologies, which will pay rich dividends if realized today.

More broadly, India needs to recognize that AI, as a “force multiplier” for local transformation and shared prosperity, will not emerge organically but will be shaped by protracted negotiations across multiple domains and strategic preparations. The data center boom affords India access to a highly vaunted global AI ecosystem, within which India is otherwise weak. In other words, it offers the country an opportunity to ask for and demand more to secure its own AI future.

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