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Decoding India's AI Governance Strategy and its Implications for the U.S.-India Bilateral Relationship

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Abstract

India is developing a unique approach to the governance of artificial intelligence (AI) and is staking out a leadership role in multilateral dialogues on responsible AI. This paper reviews India's available AI governance choices, as the country defines its regulatory model, and highlights their associated trade-offs. It also analyses these choices in light of the government's national priorities, as well as India's perceived advantages and weaknesses in various industries that might utilize AI systems. With this background, this paper examines how India's current approach to AI governance may impact the trajectory of U.S.-India technology cooperation.

Keywords: Artificial Intelligence, AI Governance, Emerging Technologies, Responsible Innovation, Technology Partnerships, Ethics, Regulation

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1. Introduction

Artificial Intelligence (AI) systems are groundbreaking technologies at the forefront of global innovation competition, presenting both incredible opportunities and significant risks to populations worldwide. In response, policymakers are navigating the complexities of this rapidly changing field, while attempting to strike a balance in AI governance, between harnessing the transformative benefits of AI, mitigating its potential harms, and prioritizing national interests in AI advancement. The year 2024 marks a crucial juncture for each country, as they decide which aspects of AI regulation to prioritize to achieve their national goals and shape this captivating technology. Among the countries actively structuring new policies and striving for a competitive edge in AI, India stands out as a noteworthy player with immense potential for success in this domain.

Our research delved into India's AI governance approach, assessing its alignment with global standards, including the U.S., given its significant role across technology sectors. Engaging with diverse stakeholders from both India and the U.S., including policymakers, civil society, academia, and industry experts, we aimed to uncover India's AI governance trajectory and its implications for international collaborations. We focused on India's current AI strategies, potential for regulatory harmonization, and its unique strengths in AI, to gauge its future regulatory directions and priorities. Our comparative analysis of global AI governance models explains India's possible role within the international AI supply chain, highlighting the challenges and opportunities for global partnerships.

First, we analysed how India's available AI governance choices and its current governmental priorities will shape its approach to AI. Until August 2023, India hesitated to enforce national AI regulations. However, a shift occurred last summer towards adopting measures to prevent user harm (Sasi 2023), likely influenced by emerging international efforts to regulate these systems across technologically-advanced states. Therefore, we present four pivotal decisions faced by the Indian government, each set to significantly impact India's AI development and policy trajectory.

Additionally, our analysis of recent AI initiatives and statements from Prime Minister Modi's Administration reveals a focus on enhancing India's global standing as a leader in emerging technologies, leveraging its workforce to integrate itself into emerging technology supply chains and utilize these technology innovations to further develop efficiencies across local industry sectors. This is highlighted by India's active role in international forums like the G20, and efforts to be a dominant force in AI governance to boost business, employment, and public services across sectors like finance, surveillance, healthcare, education, agriculture, and defence.

However, the alignment of India's AI ambitions with global standards remains uncertain, potentially affecting international collaborations; while some of India's AI initiatives and policies meet the ethical standards of groups like the Global Partnership on Artificial Intelligence (GPAI), its surveillance-based AI practices have received pushback from other member-countries, which could influence future partnerships. This intersection of India's AI priorities and regulatory approach with global strategies is a key focus of our research.

Second, we reviewed India's perceived comparative advantages and weaknesses in AI, given that these perceptions might shape how and where the government chooses to regulate the industry. India possesses AI strengths in data management, a burgeoning startup ecosystem, software expertise, and talent. However, challenges include limited high-level ML expertise, fragmented governance, and inadequate R&D funding. To capitalize on its advantages, India likely seeks a regulatory framework that avoids overregulation while fostering AI growth.

Finally, we conclude our report by presenting our policy analysis and recommendations, which are informed by our in-depth research within India. In this section, we discuss how India's emerging AI regulations align with its national goals and capitalize on its comparative advantages in the field. Finally, we explore how these insights might shape AI relationships with allied countries, especially through the U.S.-India bilateral relationship.

2. Indian Choices & Technology Priorities in Artificial Intelligence

2.1 India's Choices

While India aspires to lead the global AI landscape, Prime Minister Modi's government is confronting critical regulatory decisions to cultivate responsible innovation. However, like much of the world, India is still early in its AI governance journey. Given the unique innovation attributes India presents, determining the right regulatory approach requires a nuanced understanding of the country's unique economic, social, and cultural dynamics. Accordingly, we propose four pivotal choices that define effective AI regulation for all nations, which informed our analysis of India's forthcoming AI governance strategies:

A) Whether to establish a central AI governance framework, regulate sectorally in chosen sectors, or both.

In weighing whether to centralize AI governance, policymakers may take inspiration from the EU's approach to AI governance, as exemplified in the "AI Act." This framework is a comprehensive piece of legislation tailored to specific digital environments, while universally emphasizing risk assessments for AI across the EU. All AI systems under the "AI Act," are classified on a sliding scale of risk, from low to high, with legal stipulations for products based on their categorization ("Proposal for a Regulation of the European Parliament and of the Council: Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts" 2021).

In contrast, Canada's "Artificial Intelligence and Data Act (AIDA)," which serves as a companion document to current law, builds on existing Canadian consumer protections and human rights statutes to ensure high-impact systems meet the same expectations for safety and human rights ("The Artificial Intelligence and Data Act (AIDA)" 2022). India's approach remains unclear: a centralized framework could offer consistency, but might constrain rapid technological change, while sectoral

regulations could lead to fragmentation. Therefore, a key question we pursued in our stakeholder interviews was whether the Indian government will create a centralized AI governance framework.

B) Whether or not to defer to the private sector to adopt voluntary guidelines, restrict AI development, and establish ethical norms?

Countries like the United States rely on industry-led AI development with voluntary guidelines, prioritizing innovation over regulation. This strategy assumes that with its flexibility and innovation, private industry is ideally suited to spearhead AI development. By eliminating bureaucratic red tape, businesses are flexible to customize AI solutions to meet specific requirements, thereby stimulating economic growth and fostering social advancement. Yet critics warn that the absence of government-mandated regulations leaves space for risks like algorithmic bias. In this context, the Indian government may choose to govern the capacity of AI systems in risky contexts, such as using AI tools to decide whether individuals receive loans, immigration visas, or other sensitive circumstances.

Although there have been some government-led AI programs, such as the rollout of Facial Recognition Technologies (FRTs) in public surveillance, most AI applications in India are being introduced with little restriction by the private sector. The national government can let this private sector-driven innovation continue, or it can shift course and provide more explicit controls for these AI models in India. If India's authorities do not decide whether to establish regulations, private firms may continue to champion voluntary regulatory guidelines that define standards and norms in the AI realm.

Also, given its potential for broad-reaching societal impacts, the world's largest democracy must grapple with AI's potential to exacerbate marginalization and discrimination at an unprecedented scale. When creating AI ethical norms, these guidelines could relate to which contexts permit automation, what requirements should be incorporated into AI systems based on potential harm to the public, how technically robust an AI system should be before deployment, and how the impact of an AI system is assessed. If the government drafts these norms, it may do so by consulting knowledgeable AI experts, lawyers, and other informed parties, to assess how AI could negatively impact Indian society, and expend time creating a public report to curtail potential risks. Yet, relying on private firms to create these ethical norms means that AI benchmarks will, of course, be heavily influenced by private interests.

Yet, if the government does take the reins, it may look to several international models exemplifying ethical AI norms. For example, countries like the U.S. have provided national guidelines for the ethical development of AI in the "Blueprint for an AI Bill of Rights," while pursuing a moderately hands-off approach to regulation ("Blueprint for an AI Bill of Rights" 2022). Additionally, companies like OpenAI, Google, IBM, Microsoft, and other influential AI developers have codes of conduct and firm-specific ethical guidelines that set limitations for AI use. Similarly, the Indian government can

choose to provide these types of ethical AI guidelines rooted in the rule of law, allow organizations to take the lead in shaping norms, or leverage both mechanisms for AI governance.

So far, the Ministry of Electronics and Information Technology (MeitY) has published an industry-informed report that provides some ethical guidelines for automated government platforms, but these standards do not include universal ethical protocols. Accordingly, two key questions we used in our stakeholder interviews were: How may the Indian government rely on private-sector-driven decisions to restrict AI? What are the biggest risks associated with AI applications in India, and are government-led or private sector-led regulations best suited to mitigate those risks?

C) Whether non-Indian firms may access local data to train their models, and whether to restrict or limit foreign AI models in the Indian market.

In its mission to be a leading technology innovator, the Indian government faces several options regarding foundation AI models. One approach is to restrict the importation of machine learning (ML) models, thereby fostering local development.

Alternatively, the government could allow both domestic and international ML models to be used, with varying requirements for Indian-built AI components in specific sectors. For example, the government could mandate the utilization of Indian-designed machine learning models and local data in the healthcare sector, ensuring that automated decisions are tailored to Indian nationals. This initiative could mitigate the risk of inappropriate healthcare decisions resulting from biased AI models trained on foreign data, enhancing the quality of care for Indian citizens.

However, the need for Indian-made AI inputs may not be as pressing across all sectors, like finance, where models from other countries are often used. In these contexts, using AI models designed by other states and leveraging foreign data could minimize costs in implementing automation, without disproportionate risks to India's own population. The European Commission has highlighted how governments can navigate these trade-offs between costs and risks, by highlighting that AI systems that affect the administration of justice and crucial public services, like healthcare, should be classified as high-risk and have additional requirements, such as mandating models be trained by localized data ("Proposal for a Regulation of the European Parliament and of the Council: Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts" 2021).

Yet, the Takshashila Institution and other domestic civil-society groups in India emphasize the need for strategic autonomy across the entirety of India's AI stack, so that India's ML models reflect the perspectives and needs of its own population in decision-making (Reddy et al. 2024). At the initial time of writing for this paper, the Indian government had not provided guidance on where or how it would regulate the use of foreign ML models, which has since been updated by MeitY's March 2024 AI advisory (Soni 2024).

In the same vein, it was not entirely clear through existing legislation in what circumstances foreign companies may access Indians' personal data to train their models, but there was some indication in the 2023 Digital Personal Data Protection Act that cross-border data flows would be restricted with foreign firms (Vashista 2023). Nonetheless, the Modi administration's campaign for "Atmanirbhar Bharat Abhiyaan," or "self-reliant India," indicated that there is a strong interest among government officials to build India's own technology-driven systems, rather than permit foreign AI systems to dominate in India ("Atmanirbhar Bharat Abhiyaan: Self-Reliant India Campaign" 2023).

For these reasons, we incorporated two related questions in our interviews: Will the government permit foundation or application-specific AI systems to be used from other countries, with different requirements for Indian-built AI components in certain sectors? How may the government permit these types of systems to be used or require Indian-built AI components in specific sectors?

D) To what degree should the government invest in AI-related public infrastructure?

India's successful deployment of Digital Public Infrastructure (DPI) – including Aadhaar, Unified Payment Interfaces (UPI), and data management systems – has positioned the country as a leader in digital governance (*The Economist* 2023). Similar government control over AI infrastructure could ensure AI applications align with public interests, but necessitates significant financial resources. Conversely, partnering with the private sector can accelerate development and reduce costs, but may limit government influence over AI development. For example, the government could choose to control the development of cloud service providers and data collection mechanisms, or provide tax credits and other incentives to AI firms building this infrastructure.

The government's decisions on how involved it will be in developing AI infrastructure will significantly impact the scale of AI facilities available for startups and the computational capabilities of these organizations. Therefore, we asked local stakeholders about how the government may establish regulations or programs to accelerate government-led infrastructure construction and incentivize private AI capacity building, or look to the private sectors to pursue these programs. We also asked whether the Indian government will prioritize developing its own national AI infrastructure, including cloud services, compute facilities, semiconductor fabs, and data centres.

2.2 Overview of Research Project

During the six-month qualitative research study, beginning in August 2023, we met with government officials, academics, private sector representatives, AI developers, and non-profit thought leaders in the Washington, D.C. area. We also met virtually with representatives based in India, for their insights on AI topics pertinent to Indian stakeholders, and their perspectives on developing regulations. Additionally, on-the-ground research in New Delhi and Bangalore, where we interviewed individuals across the public and private sectors, provided firsthand insights into policy developments and potential U.S.-India collaborations. Additionally, we interviewed subject matter

experts on sector-specific AI policies and concerns in healthcare, economic development, finance, defence, surveillance, and education.

2.3 India's Technology Priorities

To understand India's AI priorities, we analysed government initiatives and India's broader political landscape. We found that the government is primarily focused on prestige, domestic security, and its developmental agenda – as outlined in the MeitY report "India AI 2023," which establishes and conceptualizes the Indian government's goals in developing and regulating AI.

2.3.1 Prestige

One of the broad ambitions of the current ruling party is their desire for India to rise as the *Vishwaguru* or 'world teacher,' which extends to AI (Sullivan de Estrada 2023). India has a favourable foundation for global leadership in this technology, thanks to its economic and geopolitical features. For one, it is the world's largest democracy and the world's most populous country, with millions of technologically skilled youths eager to contribute to its economic success.

While India's per capita GDP has risen by 245% in the last thirty years (largely driven by the technology sector), this growth has been inequitable, and parts of the country remain underdeveloped (Taneja and Zakaria 2023). Thus, to become the face of leading-edge technology, India must tackle the perception of being the "world's back office," by fostering the perception that India's institutions, its people, and its businesses are world-class and prestigious innovators.

2.3.2 Domestic Security

As a priority, the Modi government wishes to bolster domestic security through ML technology. To this end, the government has integrated AI into surveillance systems in India, which is a significant step toward improving real-time analysis and collecting actionable intelligence on domestic crime. This advancement is supporting proactive law enforcement and crisis management, and is aiding the government's efforts in improving local safety.

However, AI-based surveillance often reinforces biases, particularly related to caste, and can disproportionately target minority groups (Shah 2023). While some Indian nationals are more accepting of government surveillance compared to other democracies – evidenced by initial support for the DigiYatra facial recognition system at airports ("DigiYatra: A Contactless Air Travel Solution" 2024) – recent concerns over data misuse have led to a decline in its use since April 2024 (Bhargava 2024).

Internationally, India faces scrutiny for its data privacy practices, especially since the 1885 Telegraph Act and 2000 Information Technology Act offer inadequate protection against government data privacy violations (Boben and Patel 2023). Engaging in global dialogues and AI partnerships could help India develop a robust, standardized, surveillance framework that meets

international norms and addresses modern security challenges ("IndiaAI 2023: First Edition, By Expert Group" 2023).

However, the Indian government recently shirked this opportunity in August 2023 by passing the Digital Personal Data Protection Bill, which still exempts government agencies from privacy protections in this law (Boben and Patel 2023). Whether or not India will conform to the AI norms of democratic peers remains to be seen, but it is clear the government and its people prioritize surveillance over privacy as a social good – and look to AI applications to facilitate more sophisticated surveillance.

2.3.3 Developmental Priorities

India, despite its recent economic and technological progress, still faces significant developmental challenges, with 25% of India's population experiencing multidimensional poverty ("National Multidimensional Poverty Index: A Progress Review 2023," n.d.). Building on the success of the 'India Stack,' ("India Stack," n.d.) the government aims to become the "use-case capital for AI," focusing on agriculture, healthcare, sustainability, financial access, and education, rather than general AI advancement and development. This approach diverges from countries like the U.S. and China, who are vying for a competitive edge in advanced foundation models.

Agriculture

With approximately 70% of rural families in India primarily relying on agriculture for their livelihood, agriculture is a pivotal sector for AI integration ("FAO in India" 2024). Early-stage pilot projects, like the 'Saagu Baagu' program, which is part of the World Economic Forum's AI4AI initiative, successfully enhanced chili farming in India's Khammam district through AI-driven tools, doubling farmers' incomes and expanding to impact 500,000 farmers across ten districts.

Effective integration of AI tools for agricultural development may involve technology adjacent to the industry. Integrating farmers into the Indian credit system may make them eligible for formal business loans as opposed to informal, predatory lending ("AI for Agriculture: How Indian Farmers Are Harvesting Innovation" 2024). Additionally, initiatives like Bhashini, focused on language localization, are crucial for bridging the digital divide and ensuring that farmers can access vital agricultural information in their native tongues ("Bhashini" 2023). By combining technological advancements with supportive policies, India has the opportunity to create a sustainable, efficient, and inclusive agricultural ecosystem that empowers millions of rural citizens.

Healthcare

The Indian government seeks to bolster the availability of affordable healthcare, in tandem with the further integration of technology into the healthcare industry, to bridge the healthcare disparity between urban and rural populations (ET Bureau 2023). The IndiaAI 2023 Report explicitly sets an objective of enhancing healthcare accessibility across urban and rural areas by utilizing AI, and aims

to reduce the healthcare disparity, affirming quality healthcare as a right for its citizens. Central to this vision is the infrastructural development of AI-centric healthcare innovations ("IndiaAI 2023: First Edition, By Expert Group" 2023), which are expected to refine diagnostic precision, treatment regimes, and overall patient care (Maheshwari 2023). To date, AI has begun demonstrating its utility in the healthcare sector for mining medical records, crafting treatment schedules, and enabling early detection of critical illnesses ("Vevra Launches State-of-the-Art Hospital Pods to Fight COVID-19" 2020).

Sustainability and Climate Change

The India AI 2023 Report elaborates on the Indian government's ambition to harness AI for economic development while concurrently addressing climate challenges. For example, this report specifically emphasizes "*inclusive post-pandemic recovery and multilateral cooperation, focusing on labour market challenges, health infrastructure, climate finance, and debt governance* [...]." (Bhowmick 2023) The report highlights the government's objective of leveraging AI in smart infrastructure and urban planning. This infrastructure aims to optimize resource utilization, reduce waste, and contribute to a lower carbon footprint in India, thus creating a blueprint for sustainable urban development ("IndiaAI 2023: First Edition, By Expert Group" 2023).

Financial Access

India's financial sector priorities centre on several key initiatives to boost credit access, enhance consumer protections, and promote financial inclusion with the integration of AI technology. One notable objective made clear by the government is harnessing AI for fraud detection and risk management, which is becoming increasingly crucial as digital transactions expand ("Union Budget 2023-2024: Priority 7: Financial Sector" 2023). AI and ML technologies can conduct swift analysis of extensive datasets to pinpoint fraud-related anomalies and patterns, thus bolstering financial safety and trust for individuals and businesses (Kumar 2023). However, the Economy Advisory Council to the PM's report in December 2023, which provided an overview of financial market mechanisms in India, emphasized that AI technology must be treated with enhanced controls to avoid cascading regulatory failures in Complex Adaptive Systems (CAS) (Sanyal, Sharma, and Dudani 2023).

Moreover, the government aspires to democratize financial advisory services with AI, extending them to a wider demographic. ML algorithms will assess individual financial goals, risk tolerance, and market conditions to offer personalized investment strategies, helping people make informed decisions regardless of their financial knowledge. AI-empowered, automated trading can also usher in heightened efficiency and more robust risk mitigation strategies, contributing to market stability (Kumar 2023).

Education

A fundamental objective outlined in India's National Education Policy in 2020 is the personalization of education through AI tools. The vision is to apply AI to tailor educational experiences to students' individual needs, linguistic contexts, and abilities, as well as reduce the educational attainment gap. This initiative also aims to prepare a technologically proficient

workforce, capable of contributing to and benefitting from India's growing AI-driven economy("IndiaAI 2023: First Edition, By Expert Group" 2023).

3. India's Comparative Advantages & Disadvantages in Artificial Intelligence

India's AI policy strategies are shaped by its comparative advantages in the nascent AI industry, influencing both investments and perceptions of domestic strengths. This section reviews India's AI ecosystem assets – data, software, digital infrastructure, computer power, skilled labour, and R&D investment. It also assesses where India perceives its strengths and evaluates the likely regulatory focus, based on these advantages.

3.1 Data Availability

India possesses a significant advantage in terms of data availability. This is attributable to two factors: the large volume of data collected within the country for various national projects, and the relatively permissive privacy laws in India. The Indian government's consistent vision and strong control over the country's data management protocols, through the National Data Governance Policy, has positioned India well to harness this vast volume of data for tech advancements and innovation (The Hindu Bureau 2023).

India's robust information technology sector, combined with its access to datasets on diverse domestic populations, serves as a helpful springboard for its aspirations to be a global leader in AI. In this context, the Indian government has been inclined to facilitate access to its massive datasets for engineers to train domestic AI algorithms.

India's political use of data has led to skewed data collection for political gain, particularly in rural areas with low internet access. This results in lower-quality, non-representative datasets, leading to inaccurate analyses on issues like poverty, development, and disease control. Such misrepresentations compromise data accuracy and distort algorithmic models ("India's Once-Vaunted Statistical Infrastructure Is Crumbling" 2022).

Despite this, India's extensive data collection and current data management protocols are viewed as competitive advantages domestically, albeit with gaps in data collection. Consequently, the Indian government is likely to implement AI regulations or soft policies and programs related to data management, which allow them to leverage this advantage.

3.2 Software, Digital Infrastructure, & Compute Power

India's long-standing focus on its software industry, dating back to the 1990s, has established a significant comparative advantage in AI. This investment has made India a key player in global software development, providing a strong foundation for leadership in AI and machine learning technologies, including the possibility of improving India's place in the semiconductor value chain, should India pursue more opportunities in chip software design (Sun 2023). Targeted initiatives can

transition the existing workforce and software supply chains towards AI-centric projects, capitalizing on India's software expertise.

Additionally, India's digital public infrastructure (DPI) is a strategic advantage for AI development. Substantial government investment in DPI, including the Aadhaar digital identification program and a comprehensive digital payment system, has earned international acclaim. This robust digital infrastructure positions India to accelerate AI deployment and innovation on a global scale. The success of India's DPI, acclaimed at forums such as the G-20, offers a unique opportunity for India to leverage its existing digital infrastructure to accelerate AI deployment and innovation on a comparable scale (Kant and Mishra 2023).

However, building a robust AI industry requires substantial hardware, including advanced computational resources, like high-performance central processing units (CPUs) and graphics processing units (GPUs), and expansive data centres for algorithm training. India's hardware ecosystem lags behind, lacking the infrastructure to fully support indigenous AI development. Moreover, the capital-intensive nature of establishing a competitive AI supply chain, especially against established global players, underscores the need for substantial investments and strategic foresight in India's journey towards becoming a formidable force in the global AI supply chain.

In recognizing the limitations of the country's current computational infrastructure, the Indian government is actively seeking foreign investors to establish semiconductor manufacturing facilities in-country. This effort follows the government's announcement in 2021 of the $10 billion "Program for Development of Semiconductors and Display Manufacturing Ecosystem in India." ("Cabinet Approves Programme for Development of Semiconductors and Display Manufacturing Ecosystem in India," n.d.) Since the launch of the program, the government has allocated $2.75 billion to a Micron facility in Gujarat, matched with a $825 million investment from the U.S. company (*Reuters* 2023). Most recently, in late February 2024, India approved over $15 billion to build three semiconductor plants – although, notably, the plants will not produce advanced chips needed for AI foundation models (J. Singh 2024).

Additionally, U.S. chipmaker Nvidia announced AI partnerships with Indian companies Reliance Industries and Tata Group in 2023, focusing on cloud infrastructure, language models, and generative applications ("IndiaAI 2023: First Edition, By Expert Group" 2023). Moreover, Meta has signed a Memorandum of Understanding with 'India AI,' part of the Ministry of Electronics and Information Technology (MeitY), to foster AI development in India through collaborative efforts and the use of Meta's open-source AI models ("Forging Partnerships to Advance AI Technologies in India" 2023).

In general, India has a comparative advantage in software and digital infrastructure, and a comparative disadvantage in compute power, which is improving. Given the country's uneven strengths in these domains, we expect the government will introduce incentives to attract more of the semiconductor value chain in-country, lightly regulate these fields to allow private sector companies to build out its AI ecosystem, and incentivize software engineers to focus on ML-based technologies.

However, if India prioritizes expanding its hardware available for inference training and edge workloads, it may not need extensive domestic AI infrastructure to gain an edge in use-case applications. So far, it remains to be seen which of these goals will take precedence by the Indian government.

3.3 Skilled and Knowledgeable Labor

India's success in IT exports and software production over the past 30 years has positioned the country to have skill overflow into AI research, design, deployment, and management (Kapur 2007). In 2021, 34% of Indian graduates held STEM degrees, and the country currently has the largest STEM workforce in the world (Buchholz 2023). These professionals have skills in coding, advanced computing, software design, engineering, mathematics, algorithmic processing, data science, and other areas that are crucial to the advancement of machine learning. India has also developed a large pool of workers well-versed in English – another advantage, considering most LLMs today are trained in the English language (Kapur 2007).

To harness these skills domestically, India will need to bridge the gap between the current STEM expertise and the upskilling needed for these groups to enter the AI workforce (Bhatia 2023). Although there have been some university curriculum shifts to assist with this transition, the government could choose to mandate course requirements or play a more involved role in supporting national educational efforts to equip India's STEM graduates with hard skills for AI positions (Desouza and Somvanshi 2019). Additionally, India will need to work on retaining STEM talent within its borders. Today, there is a high rate of emigration from India for higher-paying STEM positions or graduate-level STEM education in other countries, especially in the U.S. (Choudhury, Ganguli, and Gaulé 2023).

AI advancement relies on more than just highly educated STEM professionals; lower-skill roles, like data labelling, are also crucial. India has emerged as a key hub for data labelling, providing employment opportunities for its large, unemployed youth population (Subramanian and Felman 2022) and enabling more women to enter the workforce (Ray 2023). Available labour is currently an abundant resource in India; however, the country may face challenges in transitioning its population away from agricultural positions and upskilling toward AI-oriented opportunities. What's more, much of India's IT labour force works in jobs that may be automated by AI, threatening massive economic disruption in the technology services sector.

India is considering wide-scale investments in upskilling or reskilling initiatives as a policy response. One segment of the AI workforce where India faces an acute shortage is in data centre personnel, which are crucial for cloud services and AI application deployment. India's tech giants like Wipro and Tata Group are already working to reskill their large workforce to adapt to AI technologies, yet it is too soon to tell if such investment will prevent or minimize the perceptively inevitable economic disruption (Yu 2023).

India has a significant comparative advantage in skilled and unskilled labour available for work in AI advancement, but this advantage is not absolute - India still has gaps to fill in its AI workforce that will require government programming.

3.4 Research and Development (R&D)

Today, India struggles to prioritize its AI R&D, which is vital to producing competitive algorithmic models, sectoral ML experts, and a diverse, skilled labour pool for success in this field. Among other BRICS countries, India ranks last in R&D investments (JC 2022). India's lack of investment in R&D is a critical shortcoming in the state's ability to build cutting-edge models and develop a competent workforce in emerging technologies.

Furthermore, India lags behind other countries in prioritizing government R&D funding, specifically towards developing sovereign advanced models. Despite discussions about increasing funding, there is scepticism about India's ability to develop competitive foundation models. It seems so far, India will most likely favour other areas in AI development, due to the lower government priority placed on advanced models. Instead, India may favour developing AI applications that address tailored use cases, as opposed to catching up in the development of foundation models that can compete with other countries.

To summarize, India has a comparative disadvantage in government R&D for AI, but this status may shift as India seeks to become more competitive globally in some areas of AI development.

3.5 Favourable Business Ecosystem for AI Industry

Prime Minister Modi is making India the destination for global investment in the technology industry by enacting a variety of economic liberalization reforms, relaxing certain Foreign Direct Investment (FDI) restrictions, and promoting competition.

In 2014, Modi launched the 'Make in India' initiative aiming to draw the attention of businesses throughout the world to invest and manufacture their products in India (Nagarjuna 2022). Key to Make in India's success is promoting ease of investment, particularly FDI, by minimizing regulatory hurdles, while offering attractive physical and human capital resources. Going further, the "Digital India" and "Start-Up India" programs not only present avenues for greater expansion of the technology sector but also bolster the start-up ecosystem to encourage indigenous innovation (Slover 2023).

Consequently, global entrepreneurs, notably in the technology sector, have turned their attention to India's convergence of inexpensive skilled labour and start-up-friendly policies. U.S.-based Vivek Wadhwa, for example, moved his biosciences AI start-up from Silicon Valley to India, where "*rather than creating hurdles with regulation, restricting immigration, and suffocating the tech industry, [the government] is establishing a new fund to support its AI ecosystem*," and will "*do whatever it takes to facilitate entrepreneurship... support startups and ... welcome foreign companies.*" (Wadhwa 2023).

Also, MeitY's jurisdiction extends to Software Technology Parks of India (STPIs), which promote various technology industries, including AI and ML, by providing a startup ecosystem that facilitates

collaboration between government, industry, academia, and other stakeholders ("About Software Technology Parks of India (STPI) | Software Technology Park of India | Ministry of Electronics & Information Technology Government of India," n.d.). In harmony with the government's AI industry-enabling policy directives, India's massive multinational corporations are investing greatly in India's AI-leading potential.

- Wipro, an IT consulting services company, plans to invest $1 billion in AI over three years not only for its own business, but also to identify and absorb generative AI startups through the Wipro Ventures accelerator (Yu 2023).
- Meanwhile, Tata Group and Reliance Industries, both multinational conglomerates with involvement in just about every industry possible, have each partnered with U.S.-based chipmaker NVIDIA to bring AI capabilities, "within reach of thousands of organizations, businesses and AI researchers, and hundreds of startups in India." ("Tata Partners With NVIDIA to Build Large-Scale AI Infrastructure" 2023).
- Finally, Infosys, India's second-largest exporter of software services, entered into a $2 billion deal to build out AI capabilities across five years (*The Times of India* 2023).

India's big tech companies are combining financial investments, strategic partnerships, and ecosystem development to position themselves as leaders in AI technology, rivalled only by the U.S. and China. Therefore, the Indian government's objective of enabling a flourishing domestic AI industry is another significant comparative advantage in AI. We anticipate the government will continue to lean on this advantage in building out its AI capabilities going forward and it will avoid AI regulations that stifle business in-country.

4. India's Likely Approach to AI Governance

4.1 Central Research Takeaways

Through our research in New Delhi and Bangalore, we received a wide breadth of feedback on how India will likely structure its AI regulations to help the country meet its innovation-based priorities. Based on our findings, and research on other countries leading in AI governance, we believe India will situate itself in the following spectra regarding the choices it faces for AI governance domestically:

Choice #1: A Centralized AI Governance Framework

Insight #1: The overall AI governance bias in India is not to regulate AI broadly, and instead prioritize innovation for developmental priorities. However, there will be some AI provisions incorporated into broad Indian technology laws that apply to all AI-based systems.

India is unlikely to create a fully centralized AI governance framework, but will incorporate provisions into legislation that apply to all AI-based technologies in India. Additionally, India will govern AI applications sectorally, through the regulatory bodies that set guidelines across healthcare, defence, education, finance, agriculture, and other sectors. At the same time, the government will prefer to use immediate executive action instead of legislation in areas where there are already perceived AI risks, such as content moderation and deepfakes.

Given India's desire to influence leading countries in AI innovation, Indian policymakers are pressured to regulate this space on the international stage. One technology leader we interviewed emphasized that "*we have an interesting opportunity in public policy to operate at the cusp of what's good for the private sector, the government, and the country.*"

Yet, India's distinct characteristics, namely its heterogeneity in languages and cultures, as well as its status as a developmental state, have prompted the government to develop regulatory priorities that differ from other tech-innovating nations. For example, a U.S. government representative posited that for India, "making money is not the goal, creating jobs and economic growth are the goals." In fact, there is an overwhelming position in India to expressly *not* follow in the footsteps of the EU's AI Act and the United States' efforts, as "*India, on the other hand, is clearly focused on making sure the innovation and impact of AI for good does not go away*," according to a representative from a large technology multinational company.

For example, a Delhi-based technology journalist reiterated that India is unlikely to make big moves in AI regulation anytime soon, given how nascent the generative AI ecosystem is domestically. Further, India's market is unique from any other country, given its great heterogeneity in ethnicities, languages used, and cultural makeup among its 1.4 billion population. While it has enjoyed incredible economic growth in the last two decades, India remains a developing economy with worsening income inequality, combined with less than 50% internet penetration (Petrosyan 2024).

In this context, to avoid stymying the fledgling AI industry, and to be responsive to the country's development priorities, India's policymakers are unlikely to enact comprehensive AI policy and regulation, but instead will update its existing laws. According to the journalist, the "*government aim is to have a balanced approach, have businesses nurture the economy, but the population gets their own control.*"

As this technology journalist mentioned, "*since general elections are on the way, they are trying to delay that move of updating their own IT Act and are now trying to update IT integrative rules.*" Thus, instead of a single, AI-specific bill, several stakeholders we interviewed highlighted three bills the Indian government will update in its efforts to be more responsive to the rapidly evolving digital space:

- **Digital Personal Data Protection Act (DPDP):** Passed in August 2023, after five years of redrafts, DPDP codifies how an individual's data may be collected and used, and includes the right for individuals to withdraw consent. The law applies to Indian residents as well as non-citizens living in the country. It allows for cross-border data transfers, enabling Indian data to be utilized outside of the country by non-Indian actors – unless the data is transferred to certain restricted countries or territories. It does not supersede other measures by government agencies that impose localization requirements. The DPDP exempts certain entities and purposes – including data processing necessary for research if personal data is not used in decision-making, as well as startups – from some potentially cumbersome compliance provisions (Burman 2023).
- **Digital India Act (DIA):** Intended to replace the Information Technology Act of 2000 to ensure "*openness, safety, trust, and accountability of the Internet*," notably addressing emerging technologies like AI and quantum computing (Chauriha 2023). This act has yet to be released for public viewing, and is slated for release in 2024. DIA is expected to contain greater consumer safety and data protection measures, and clarify liability of intermediaries hosting undesirable third-party content on platforms.
- **Telecommunications Bill:** Introduced in December 2023 and in effect as of July 2024, the updated Telecom Bill proposes far-reaching powers to control communication networks and penalizes unauthorized access to telecom network data.

While broad AI regulation was not implemented before the general election, as many of the stakeholders we interviewed anticipated, Modi's office has expressed dedication to being a global norm setter in AI policy, especially leading among its peers in the Global South. After the election, we expect to see the three updated bills reflect India's goals of regulating AI systems and access to data to serve national interests, as well as minimizing the dominance of foreign technology companies.

Whether these updates will be sufficient is a source of debate, but some of the technology lawyers we spoke to mentioned "*the absence of overarching legislation is worrying.*" Even some of the biggest private sector stakeholders we interviewed agreed and said it is "*important that there is some regulation…it cannot be kept completely open.*"

As of May 2024, MeitY representatives have indicated that the government is also considering additional AI legislation or statutes incorporated into the DIA that protect the rights of news publishers (Agarwal and Aryan 2024) and regulate deepfakes (Pandey 2024), which relates to our second insight.

Insight #2: India will largely govern AI applications sectorally, with special emphasis on deepfakes and content moderation. Also, India will implement restrictions reactively to perceived risks and harms caused by developing AI systems.

Stakeholders across the AI innovation ecosystem - from the private sector to civil society - confirmed India is not inclined to enact sweeping AI regulations. Instead, policymakers are focused on regulating particularly sensitive sectors that demand oversight to mitigate far-reaching harms that

are being observed. A high-ranking technology representative from an American multinational company confirmed that the "*government is quite clear that regulation is never going to come ahead of tech developments.*"

However, in India, the threat of deepfakes dominates most AI regulation conversations, especially deepfake applications used in social media and finance. Before the 2024 election, government concern surrounding the AI-enabled proliferation of deepfakes was front and centre, for its feared influence over democratic processes and public perception. Although the last administration was near certain that Prime Minister Modi would keep his seat, the government reminded social media platforms that it is illegal to post misinformation, going as far as threatening to block platform network access. The administration's fears were apt, given that competing campaigns made extensive use of deepfakes in the leadup to the 2024 elections.

These developments also highlighted significant gaps in AI-related legislation: although the IT Act makes it illegal to impersonate an individual, or transmit explicit material online, this law does not specifically target deepfakes. Accordingly, one area where the government seems unusually eager to regulate AI technologies is the use of deepfakes on social media. While many tech policy experts argue that using AI image generators for satirical political commentary is a form of protected speech (especially in the U.S.), Indian policymakers remain steadfast in banning the use of deepfakes. For example, a government representative we spoke to highlighted the threat of this technology by claiming that "*SMS chains and YouTube videos could set off riots on any Friday.*"

In place of regulation, a representative of a large American technology company underlined the tech giant's dedication to responsible AI, and reiterated its dedication to having open conversations with the Indian government to tackle deepfake-related issues. Multinational tech actors would prefer policymakers to not enact legislation that would make social media platforms criminally liable for hosting deepfake content on their sites, and are thus encouraging policymakers to avoid such measures.

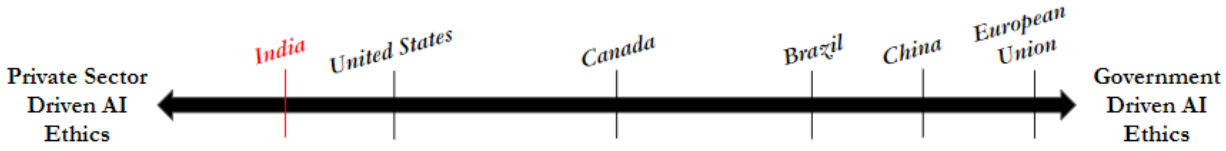
Nevertheless, Prime Minister Modi's office is pushing to make platforms criminally liable for hosting and proliferating deepfakes, through executive actions, with the threat of outright banning platforms if they fail to comply. This strategy was heavily critiqued by human rights and civil society groups we interviewed that said, "*while it does allow the government to make quick decisions, it bypasses democratic lawmaking.*"

Additionally, the Indian government is keen to implement stringent sectoral regulations for AI applications in finance. The financial sector has been the first adopter of security and regulatory measures in the face of emerging technology threats in India, and the case of AI integration is no different. Since India has one of the largest and fastest-growing fintech industries globally, on top of the incredible success of the DPI-enabled universal payments interface (UPI), many of those surveyed in our research pointed to the financial services sector as a priority for sectoral AI regulation.

A few domestic model developers in India highlighted that finance is a "*high-risk sector*," and by "*broad definition, regulations (in finance) will have a consequential impact.*" Noted threats include

deepfaked voices to "trick" biometric security checks, as well as discrimination perpetuated by biased algorithms to determine creditworthiness. Also, public expectations for the AI safety of this sector seem higher, and an AI consultant we spoke to mentioned that "*loan applications are a concern in the finance sector...the government has a responsibility to citizens that they do not get scammed...it's a maximalist protection approach, similar to China.*"

Choice #2: Defer to the Private Sector to Shape AI Ethics



Insight #3: The Indian government will predominantly defer to the private sector to create AI development restrictions and shape AI ethics domestically, while providing some fundamental guidelines through governmental AI strategy reports. Yet there are some areas of AI development led by the government that are already publicly contentious and are gaining more attention in India. Whether the government decides to set harder limits on these AI use cases remains to be seen.

India is likely to take a predominantly hands-off approach to restricting AI development, and will largely rely on the private sector to determine which applications are worth pursuing in India – and which should not be pursued. However, this expectation comes with the caveat that the Indian government will have more explicit restrictions for automation in some sectors, and will reactively set limits for AI development if there are perceived harms for the public or risks to public order. For instance, there have been more restrictions set for automated loan applications in India's finance sector, since there was rampant over-lending and debt exploitation through these platforms during the COVID-19 pandemic.

One technology expert we interviewed stated the government "*wants to be a facilitator and work with companies and make these regulations so Indian companies can come together, work together on public problems.*" At the same time, the government will likely play a slightly more involved role in constraining AI development domestically than the United States, since there are certain applications which the government would like to restrict when used outside of government programs, rather than letting the private sector dominate.

For example, one area where AI applications are being developed predominantly by the government and becoming publicly contentious is the use of Facial Recognition Technology (FRT) in public surveillance systems. FRT has seen increased usage by Indian law enforcement agencies and airports across the country. Ameen Jauhar, Senior Resident Fellow at the Vidhi Centre for Legal Policy, posits that the widespread adoption of FRTs by the police (across states) in India is a result of the techno-optimism within the establishment and "*function creep*," occurring across Indian agencies.

Jauhar provides the example of Delhi Police practices, which initially used FRT to identify missing children, but now applies this technology to criminal investigations. In his own words, "*(there has been a) significant detour from its prescribed usage,*" in the case of FRT in India. He argues this "*detour*" is particularly dangerous, due to the lack of regulatory guardrails, and researchers at another Bangalore-based think tank mentioned the "*policies that ideally should be in place to ensure consent while sourcing facial data from people and the way it's been processed is transparent and accountable aren't in place.*" Also, as one public policy manager at a U.S. tech giant succinctly put it, "*there simply aren't sufficient restrictions on FRT.*"

Through our interviews, we learned that the absence of regulations for this technology is not a function of the nascency of the AI field or bureaucratic ineptitude, but rather stems from deliberate government inaction. Jauhar describes the increased use of FRT in surveillance as "*happening inside an administrative black box.*" For instance, three new bills were passed in the latest parliament session, replacing British-era criminal codes (V. Singh 2023). Yet FRT usage and the admissibility of evidence secured through these technologies were simply not mentioned in these bills.

Per Jauhar, Right to Information (RTI) requests looking into internal memoranda and rules for government FRT usage have been rejected as well. He claims that there is thus a "*clear intention on the part of the state to cover its tracks and give it as much leeway as possible*" when it comes to the collection and processing of personal information for "*public order.*" This sentiment was shared by other legal experts we interviewed, who mentioned the "*Data Protection Act language has granted sweeping exemptions to the government for collection and processing personal information for public order and national security,*" which is "*likely to be mirrored in any restrictions created for AI applications as well.*"

Furthermore, the judiciary has been advocating for the incorporation of AI systems into its daily operations, aligning with the broader trend of integrating conventional information technology to digitize democratic processes. In this context, the Supreme Court of India has introduced SUPACE, the Supreme Court Portal for Assistance in Courts Efficiency, an AI portal designed to gather and analyse data from the numerous backlogged cases within the Indian judicial system. Additionally, the court has launched SUVAS, the Supreme Court Vidhik Anuvaad Software, serving as a translation tool for court documents (Saha 2022).

Jauhar emphasizes that although these advancements may appear advantageous on the surface, a delicate balance exists in implementing technology to enhance judges' efficiency without replacing their decision-making capabilities. He asserts that AI is "*definitely displacing human judgment,*" citing an instance where a judge reversed their instinctual decision to grant bail after conducting research using ChatGPT.

As these AI use cases spread, the government seems to be in no hurry to impose regulations that will hamper the performance of state functions. Jauhar expanded on this development and suggested that while the government will regulate the use of surveillance technology in the private sector, it will seek to exempt itself from any restrictions. He predicts that FRTs will remain unregulated, as the

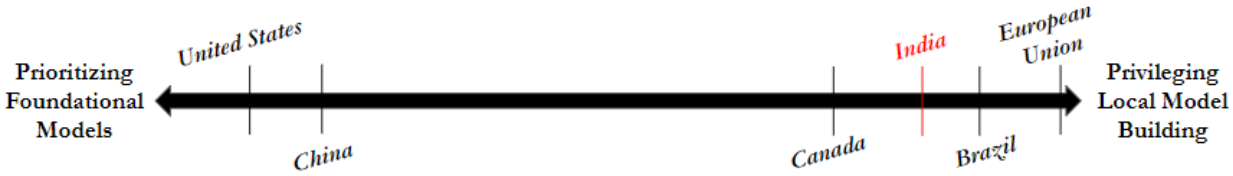
government awaits potential legal challenges for any future developments; the government's preoccupation with achieving developmental outcomes requires them to forgo regulations in the short run.

Other civil society stakeholders we interviewed offered a slightly different perspective on the efficacy of public opinion and pressure points on AI ethics in-country. One of the ethical AI institutes we interviewed mentioned that "*lawyers within the judiciary system are putting pressure on the government to set limits on this technology's use, and groups like the Internet Freedom Foundation are advocating for greater public digital rights in India.*" Additionally, "*field experts that serve on government AI committees are pushing for change in legislation and public requests for comments on papers produced by NITI Aayog are other avenues for pressure, where comments from experts and critiques on ethical AI are shared with policymakers.*"

Moreover, the Indian government seems unlikely to provide additional AI ethical norms beyond strategy reports produced in collaboration with the private sector, which provide guidelines for responsible AI, and commitments made through global dialogues like the GPAI. As established throughout this report, the Indian government has produced several national AI strategy reports, in coordination with the private sector and civil society, that espouse guidelines for responsible and ethical AI.

Yet beyond these reports, Indian stakeholders believe the government will continue to defer to the private sector to shape AI ethics domestically. Further, the nongovernmental organizations and legal experts we spoke to who specialize in AI ethics in India stated that the "*government's priorities are around innovation and human rights take the back seat*," and "*the government strategy seems to be to push the technology first and address the harms later.*" Therefore, the Indian government may slightly shape AI ethics in-country, but the private sector will largely guide these norms. India has put forward more ethical AI directives through groups like NITI Aayog than Canada, but we do not anticipate the government creating a comprehensive document like the United States' "AI Bill of Rights."

Choice #3: Prioritizing Local Model Building & Data Localization



Insight #4: India seeks to become the AI use-case capital of the world, and wants to prioritize local model building – that will serve its population's needs – over foundation model development.

India is interested in prioritizing data localization and population-specific ML models to meet its developmental priorities, but some larger Natural Language Processing (NLP) models will also be used domestically to help with innovation. A representative from one of the large tech multinationals

in India explained the government aims "*to use service centres that penetrate in rural areas so training sets are as localized as possible*," but the government recognizes "*that U.S. tech companies have user data from around the world that new companies lack.*"

To help build out the AI industry locally, India will leverage the NLP capabilities of foundational models created in other countries to assist with translation and language capture across platforms, but ultimately, the government seems likely to restrict model building and dataset usage so that they are representative of Indian communities in use-case applications.

India's ambition to become the "AI use-case capital of the world" is evident in its model localization initiatives, tailored to meet its population's needs, and selective AI-application developments. A Delhi-based journalist we spoke to stated that the government is "*looking to limit biases and make things easier for localization and use Indian culture and Indian wants, especially targeting Indian customers.*" For example, this commitment is reflected in the government's recent efforts to enhance the Unified Payments Interface (UPI), by focusing on issues like data portability to improve its functionality for users across different regions of India.

A prime example of India's frugal approach to model building is the development of "Bhashini," an India-specific LLM designed to capture the linguistic diversity of its population, thereby creating AI solutions that are not only technologically advanced, but also culturally and contextually pertinent. Many stakeholders we interviewed within India anticipate firms overlaying language programs like Bhashini with other AI systems developed for specific computational goals in India, like agricultural production analysis. This strategy diverges from other AI-focused countries that are prioritizing the development of large foundational models for general-purpose use.

To execute India's goal of creating robust AI models specifically for India, Rahul Matthan, a Bangalore-based technology lawyer, emphasized how crucial it is for the government to establish clear regulations around open-source data and fair-use policies for Indian model training. Such legal clarity would facilitate public innovation and safeguard intellectual property rights. Addressing copyright concerns is key, since AI frameworks allowing fair-use exemptions could encourage innovative AI application development domestically by easing copyright violation concerns.

Additionally, Matthan mentioned India should leverage the linguistic wealth of the "*Indian National Broadcast, which produces content in various regional languages, nationwide, every day.*" However, this project would require creating a cooperative framework that allows private sector access to these resources and encourages content creators to share their work.

A representative from a large technology company agreed and said, "*traditional legal concepts are going to be shaken up related to AI developments…we have to reimagine IP rights, opt-out rights, etc.*" They also mentioned India can improve the resiliency of its models in different use cases by exploring more red teaming exercises, where experts attempt to "break the models" through experimental hacking. By exploring the vulnerabilities in India's ML systems, stakeholders like the Data Security Council can ensure AI-based services remain operative and effective for its domestic population.

Overall, the government's involvement in select AI projects demonstrates its genuine intent and capacity to implement significant technological advancements for its population, far beyond mere strategic posturing. By embracing its potential role as the AI use-case capital of the world, India's approach not only advances technological prowess, but also crucially integrates a significant sector of its population into the digital economy. This integration paves the way for communities to access higher levels of economic opportunity, bridging the digital divide, and fostering inclusive growth across various sectors of the Indian economy.

Choice #4: AI Infrastructure Development

Insight #5: The Indian government wants to play a central role in building AI infrastructure domestically, including cloud platforms, data collection centres, and computational facilities. However, the government's capacity to meet these objectives and implement a Digital Public Infrastructure (DPI)-style approach to AI is yet to be determined.

The Indian government wants to provide more AI infrastructure than most countries today, but their capacity to do so was an area of disagreement among the experts we interviewed in our research. In general, there is interest in India to take the success of DPI initiatives the government created through the G-20 and translate that infrastructure model to AI, or a "DPI for AI" approach. Yet this government intervention and capacity-building method will demand immense amounts of capital to create computational facilities, data collection centres, and cloud platforms, which the government may not have independent of private firms.

Based on our research, a DPI approach to AI appeals to the government for the opportunity to leverage its unique data-sharing protocols across agencies and translate that advantage and cache of data into machine learning capabilities catered to Indian populations. This approach would also allow the government to be the source of AI innovation domestically through infrastructure development and level the playing field for competitors, rather than solely relying on tech multinationals to dominate this infrastructure space.

Additionally, some of the civil society groups we interviewed said that "*DPI is a powerful tool for diplomacy and data sovereignty.*" The U.S.-Indian Business Council (USIBC) mentioned these projects could also provide "*infrastructure to build on*" so that new AI companies can continue to expand the government's efforts.

Although one of the government's model-developing partners mentioned several cooperative initiatives are ongoing, and the government is making its existing computational infrastructure more accessible and efficient, they also stated that "*setting up infrastructure will be fundamentally different*

for AI." These initiatives will require large quantities of capital that the Indian government may simply not be able to provide. However, if the Indian government leans on the private sector or other AI consortiums to provide this capital and tailors its hardware build-outs for use-case application training, its ambitions will be much more achievable.

A journalist documenting these types of investments mentioned AI infrastructure "*requires a lot of capital…not sure the government has the money for this experimentation.*" Another ML engineer helping the government with regulations shared this perspective and said, "*the government is not going to be involved in indigenous compute infrastructure, but as long as it's stable, it doesn't matter if it comes from a cloud provider…if tech service providers build the infrastructure on existing cloud service providers…it unbundles the market to different players that provide services…building standalone infrastructure is very tough.*" He also argued that these cloud service providers will make solutions cheaper for SMEs.

U.S. representatives shared this sentiment and said "*we can address a few issues here and there, but we can't compete with the money big tech throws around.*" Additionally, one of the legal experts we interviewed mentioned the India Data Management Office (IDMO), which was created for DPI national data sharing, still faces barriers to making its resources useful. They stated, "*access to data is not easy, and the quality is also not always good.*" They also argued there "*is no government capacity for large-scale data collection for AI*," and pointed to Microsoft building the country's agri-stack to get the project off the ground as an example.

However, there are several promising areas of government-led infrastructure development that indicate they are taking this priority seriously. For example, the government's Open Network for Digital Commerce (ONDC) ("About: Creating an Inclusive Ecosystem for e-Commerce" 2024), which "*operationalizes fair play*," has brought in multinationals to implement this program and create a digital highway for network access. Furthermore, participating companies must ensure they follow privacy protocols used traditionally in DPI. Also, local AI nonprofits have mentioned that "*capacity building for community Wi-Fi in villages is ongoing*," which is improving connectivity and data collection capabilities in rural areas of India.

Another domestic consulting group working on AI projects argued the government intends to build out the infrastructure it can – a directive coming directly from the Prime Minister's Office (PMO). They stated, "*The government is funding multiple research projects which are also run by private companies…these include GPU clusters and clients building a sovereign cloud.*" Additionally, they mentioned, "*there will be a government bias toward creating indigenous compute (infrastructure).*" The scale at which the government can pursue its infrastructure goals is yet to be determined, but the possibility of this development is certainly contentious in India.

4.2 Implications for the U.S.-India Bilateral Relationship

Our research revealed several critical implications for the U.S.-India bilateral relationship related to AI governance. First, India is positioning itself to be the "AI leader of the Global South," yet will

likely continue to rely on U.S. infrastructure needed in the early stages of the AI value chain, such as compute power.

India's reliance on data exchange and computational services from American technology firms could become further complicated, should India decide to build out AI infrastructure in a DPI-style manner. This relationship could also be strained by trade restrictions the U.S. places on India, including export controls on supercomputers (Wolcott, Homer, and Goodman 1998), the International Traffic in Arms Regulations (ITAR)'s "dual-use" technology classifications ("Amendments to the Export Administration Regulations Implementing an Additional Phase of India-U.S. Export Control Cooperation" 2017), and emerging AI chip export controls (Sevastopulo and Reed 2023).

Second, the U.S. and India are developing complementary AI governance strategies, despite some tensions over how India is approaching deepfakes and content moderation. Finally, India's emerging AI ecosystem offers advantageous investment opportunities, unique machine learning resources and applications, and a positive outlook regarding AI's potential, which are all appealing to U.S. stakeholders.

India wants to be an AI governance leader for the Global South, and will pursue opportunities to export its AI applications and governance model, to expand its G20 influence. India wants to lay the foundation for other developing countries creating AI governance frameworks, which could allow them to leapfrog technologically and capitalize on their available resources. For example, India sees its approach to developing AI tools for specific use cases as a comparative advantage that can work in other developing nations.

Similarly, India views its model of AI governance, which promotes indigenous AI startups and capitalizes on the diversity reflected in its data, as an impactful governance model that can be exported to other countries. One government ministry even stated that "*technology can be a great divider or great enabler for international development and collaboration, AI can enable the bridging of technology gaps, and the Global South should be considered in the regulation conversation.*"

Furthermore, in an interview with an executive from a large U.S.-based tech firm operating within India, **it was made clear after 2023's G20 summit in New Delhi that India holds a much more significant role in the Global South in the realm of AI governance**. The summit opened conversations about how India could expand upon the GPAI to facilitate the creation of such AI frameworks in the Global South. However, it is important to note these forums take time to solidify a consensus among willing nations. A high-ranking Indian government official reinforced this vital caveat, mentioning the lengthy negotiation process before the successful agreement of a new resolution on AI at the 2023 GPAI in New Delhi.

Yet, unlike its AI framework of governance, which is ripe for dissemination, **Indian experts we interviewed are sceptical of India's ability to export actual AI technology to other nations.** A prominent technology lawyer in India mentioned how improbable it would be for India to export its

indigenous AI startup technology elsewhere, implying that the LLMs being created in India lack both the sophistication and adaptability that U.S. LLMs already excel at.

Thus, there are no clear advantages to India exporting aspects of its AI technologies to other countries. On the other hand, another Indian multinational representative stated, "*India has realized that the domestic market is not enough…the last three and a half years, we've moved from a country shying away from trade policy conversations in AI to very active trade policy conversations.*"

However, a lawyer we interviewed discussed the **possibilities of exporting DPI technology and solutions to other countries, mentioning discussions they had with the government of Brazil a short time before our interview**. Other nations have a clear interest in building out a DPI framework like the one existing in India. These initiatives to build such DPI in other countries would allow India to promote the indigenous technology that made its DPI successful, which may eventually be integrated with other AI systems. It could also provide pathways in negotiation and discussion surrounding the promotion of its aforementioned AI frameworks.

Additionally, the U.S. and India are, in broad terms, developing complementary AI governance strategies. So far, India and the U.S. are deferring to the private sector to predominantly drive AI developmental constraints and ethics; participating in AI governance forums, like the GPAI, to harmonize regulatory values; prioritizing infrastructural improvements to support nascent businesses; and using sectoral regulations to ameliorate user harms. Moreover, India is establishing itself as the AI application "use-case capital of the world," and is doing so by being comparatively lax in its approach to data privacy to bolster AI application development.

While the government of India exhibits an "*Indian bias*," giving Indian companies preferential access to AI inputs, American companies also enjoy great opportunities in the AI applications realm. Exemplifying this relationship, the Microsoft representative we spoke to pointed to the nearly 15,000 Indian partners that "*build solutions on top of our technology.*"

Despite their converging goal of prioritizing AI innovation through programs like the initiative on Critical and Emerging Technology (iCET), the U.S. and India are still facing some pain points in their bilateral relationship related to AI development. According to several State Department officials based in Delhi, content moderation and deepfakes are a contentious issue between the Indian government and American technology firms. The Indian government's restrictive approach in these areas, which we previously highlighted in this report, means American technology firms could incur large costs if AI-generated content proliferates across their sites.

Depending on the executive actions the Modi administration takes related to deepfakes and platform accountability, social media firms may choose to change their business involvements in India and close their AI-related projects. However, we cannot confirm with certainty how the U.S. and India's different approaches to content moderation and deepfakes will widely impact the AI corridor between these nations.

India's emerging AI ecosystem may offer advantageous investment opportunities and appealing machine-learning resources for U.S. companies. India's comparatively relaxed regulatory

environment is opening opportunities for businesses and state partners to invest in AI start-ups domestically, where they may not thrive in areas like the EU or China. Also, India's large supply of data and streamlined data-sharing protocols are resources that American tech multinationals are interested in leveraging to develop new models and products.

Furthermore, consistent optimism amongst the public, civil society, the private sector, and policy officials related to AI's potential to positively impact Indian society distinguishes the country from other states; despite some exceptions related to surveillance systems, Indian stakeholders consistently mention they believe AI will be a fundamental good to help the country succeed. Each of these facets of the AI ecosystem in India are driving partnerships between the U.S. and India and could improve relations related to AI development.

However, India's reliance on data exchange and computational services from American technology firms could become further complicated, should India decide to build out AI infrastructure in a manner similar to DPI. To date, India's nascent AI industry relies heavily on U.S. tech giants, like Microsoft, for crucial ML elements and program implementation, such as data processing, model building, and computing power. In the same vein, U.S. companies are highly dependent on Indian labour for IT outsourcing for tasks such as data labelling and software engineering. If the Indian government decides to take a more prominent role in creating cloud components, data centres, and other AI infrastructure, these actions may displace American business or prompt friction with renewed government oversight.

Some of the experts we interviewed also asserted these interventions could alter the monopolistic status that American tech firms have over the industry. In fact, the government may, through data localization mandates, choose to withhold newly-collected data caches or access to cloud and computing facilities they create in order to benefit localized industries. Also, the government may require specific data exchange transfers from tech companies to operate in India if they want to use localized data, thereby levelling the resource playing field and improving the training capacity of Indian models. With that said, as India shifts away from being the "*world's back-office*," American companies may find themselves collaborating with the Indian tech industry rather than simply outsourcing their IT needs.

Despite optimistic declarations of portending India's rise to AI dominance, **large American tech companies may already be inadvertently serving as gatekeepers for Indian AI developers, given the dearth of Indian companies with advantages in the chips and computing infrastructure layer of the AI stack, and reskilling issues**. The challenge of AI innovation concentrated amongst a few American big tech companies is concerning for the American government as well, as exemplified by the recent Federal Trade Commission's inquiry into potentially anti-competitive partnerships between Microsoft and OpenAI, Amazon and Anthropic, as well as Alphabet and Anthropic (Graham 2024). Depending on the outcome of this inquiry, the decoupling of big tech and a few select AI developers could very well have downstream effects for the Indian tech industry, including

opening up the Indian market to greater R&D investment flows, greater competition for cloud service providers, and different access to AI chips.

One of the American technology representatives we interviewed in India confirmed the government hopes these multinationals can help with reskilling efforts and "*expects a lot of industry to be able to help with the ecosystem...capacity building for the workforce as soon as possible, so the next generation getting into the tech space should be AI ready.*" Clearly the interdependence between India and the U.S. in the AI industry creates opportunities for jointly-driven innovation, but it may also introduce potential friction points. Both countries are still navigating their national interests and collaboration to ensure the long-term stability and success of their AI pursuits

In this dynamic landscape of emerging technology, the collaboration between the United States and India is a strategic imperative for both nations. A common thread in our conversations revealed a shift in how these countries approach their relationship with technological innovation, as India moves beyond scaling and deploying foreign technologies and instead collaborates with U.S. firms to build its own development-oriented innovations. In strengthening this bilateral system of positive technology transfer, India will establish itself as an innovator for countries in their development journeys, leveraging its deep talent pool cultivated by decades of American investment.

While there is some scepticism about how much of the AI value chain India can build within its own borders, it is all but certain India will emerge as a technology superpower to contend with. In terms of the U.S.-India relationship, this strategic alliance – and mandate to decouple from China – will be a linchpin for fostering economic resilience, compensating for trade shifts, and shaping the future trajectory of the global technology sphere.

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