
India's "Emerging-Economy Model" for AI Policy

By Kaori Iwasaki
(iwasaki.kaori@jri.co.jp)
Senior Economist
Economics Department

Summary

1. Since the latter half of the 2010s, countries around the world have been moving in earnest to formulate AI policies. Many governments in developed countries place emphasis on improving corporate productivity and strengthening international competitiveness, and the governments of the U.S and China are also engaged in AI development competition, as part of their broader battle for global dominance. In contrast, a distinctive feature of the Indian government's approach is that the aim is to use AI to address social challenges and achieve inclusive growth. The prioritization of social problem-solving is not unique to India, as other emerging and developing countries share this orientation to varying degrees. In that sense, the Indian government's approach to AI utilization can be characterized as an "emerging-economy model."

2. Recently, a view has emerged that India's dependence on foreign countries for AI technologies and infrastructure is undesirable from an economic standpoint. There is also a growing recognition that reliance on AI models developed overseas has inherent limitations in terms of addressing India's social challenges. Against this backdrop, momentum is building within the Indian government to pursue "self-reliance" in the AI domain, and to promote the development of indigenous AI models.

3. To that end, the Indian government has introduced measures such as 1) providing computing resources, 2) preparing data necessary for AI training, 3) supporting multilingual capabilities, and 4) supporting the development of foundation models. For the time being, it is focusing in particular on 3) supporting multilingual capabilities, i.e., collection and translation of material in the numerous local languages spoken across India. This is intended to address the fact that a substantial number of people, especially those living in rural areas, understand only local languages.

4. Underlying the Indian government's AI policy is the concept of digital public infrastructure (DPI). DPI refers to online infrastructure designed to make it easier for the public and private sectors to provide digital services, with Aadhaar, the personal identification number system, being a representative example. In AI policy as well, the government positions the infrastructure necessary for AI development as a form of DPI, and seeks to promote AI development in both the public and private sectors by building this infrastructure itself. In parallel to this, India is also working to strengthen, with AI, the DPI it has built to date. Specifically, it is deploying new multilingual and voice support capabilities and expanding existing biometric authentication systems.

5. Although India's relatively weak R&D capabilities will make it difficult in the near term to achieve self-reliance in AI development and operation, it is certainly likely that advances will continue to be made in the use of AI to address social challenges. For such initiatives, understanding India's on-the-ground realities and responding appropriately will be more important than R&D strength. If India succeeds in generating a wide range of AI solution use cases, and if these are subsequently adopted as model examples by other emerging and developing countries, we can envision a future in which India expands its global influence in the AI field through establishing a position in the world distinct from the U.S. and China.

Introduction

The emergence of large language models (LLMs) has made it increasingly plausible that artificial intelligence (AI) may one day possess intelligence on par with humans, and countries around the world now face a common challenge: how to leverage AI for their national interests. Governments of developed countries are primarily seeking to use AI to enhance corporate productivity and strengthen international competitiveness. In contrast, the Indian government's approach is characterized by the goal of using AI to address the country's numerous, multilayered, and diverse social challenges and to pursue inclusive economic growth, such that no one is left behind, and this approach can be characterized as an emerging-economy model. To realize this vision, the Indian government has already begun taking steps to support the development of indigenous AI models, based on the view that AI models developed overseas have inherent limitations.

Underlying India's AI policy is the concept of digital public infrastructure (DPI). This concept holds that, in order for the benefits of digitalization to reach broad swathes of the population, it is effective for the government to build the common infrastructure necessary for the creation of diverse digital services and then make it widely accessible to both the public and private sectors. Based on this concept, India has developed DPI such as Aadhaar, a personal identification number system, and the Unified Payment Interface (UPI), a cashless payment platform. The Indian government is also applying the concept to AI policy, as it moves to build infrastructure for the development and utilization of AI. In parallel to this, efforts are also underway to strengthen existing DPI through AI.

When discussing AI, attention tends to focus on the U.S.–China competition for global dominance. However, the Indian government's initiatives merit attention because if they prove successful, they could offer pathways for addressing diverse social challenges faced by other emerging and developing countries that are in similar circumstances.

This paper examines India's AI policy, clarifying its objectives and the methods through which

it is being advanced. Broadly speaking, AI policy can be divided into two types: proactive policies aimed at maximizing the benefits of AI, and protective policies aimed at minimizing its risks. These two dimensions are interrelated. For example, strict rules to prevent misuse can enable more active deployment of AI services. It may not be appropriate to discuss them separately, but this paper deliberately focuses on proactive policies.

1. AI-related trends in India

(1) India's active use of AI

Large language models (LLMs) are a type of foundation model specialized for text data, and they are groundbreaking in that they can understand human language and generate text in a natural, human-like manner. Explanations of terms such as LLM and foundation model are presented in Table 1.

With OpenAI's public release of ChatGPT, a conversational generative AI service utilizing an LLM, in November 2022, AI can be said to have entered a new stage. Since then, high-performance LLMs have been released one after another by U.S. companies and, subsequently, by Chinese firms (Table 2), and various generative AI services based on these models have appeared. Generative AI not only excels in terms of performance, the barriers to use are low, because it can be used online and instructions and questions can be entered in everyday language (natural language). This has rapidly broadened the user base among companies, individuals and government organizations.

The situation surrounding AI in India is somewhat complex. India has a population of 1.4 billion, with significant social and economic disparities. Looking at the country as a whole, AI utilization cannot be described as particularly high, nor is the business environment surrounding AI necessarily favorable. However, when focusing on

Table 1 Explanation of terms

Generative AI	<ul style="list-style-type: none"> •AI that uses foundation models as core technology to generate content such as text, images, and audio
Foundation model	<ul style="list-style-type: none"> •A highly versatile model pre-trained on large volumes of diverse data that can be applied to a wide range of tasks •AI models tailored to specific tasks are developed based on foundation models by performing fine-tuning and other processes
Large language model (LLM)	<ul style="list-style-type: none"> •A type of foundation model •Pre-trained on large volumes of text data, and capable of understanding and generating natural language
Multimodal model	<ul style="list-style-type: none"> •An evolution of the LLM •An LLM augmented with capabilities such as image and audio processing •Also referred to as a multimodal LLM
AI tool	<ul style="list-style-type: none"> •A service or software that leverages AI
<Reference>	
GPT model	<ul style="list-style-type: none"> •An LLM developed by OpenAI
ChatGPT	<ul style="list-style-type: none"> •A conversational generative AI service provided by OpenAI using the GPT model

Source: Prepared by JRI based on various materials

Table 2 Companies developing the world’s major large language models (LLMs)

Headquarters	Company	Founded	Main model (series)
U.S.	Meta	2004	Llama
	OpenAI	2015	GPT, o3
	Anthropic	2021	Claude
	xAI	2023	Grok
U.K.	Google DeepMind	2010	Gemini
France	Mistral AI	2023	Mistral
China	Alibaba Cloud	2009	Qwen
	Z.ai	2019	GLM
	Moonshot AI	2023	Kimi
	DeepSeek	2023	DeepSeek

Notes: Google DeepMind was founded as DeepMind Technologies in 2010 in the U.K., before being acquired by Google (now Alphabet) in 2014.

Source: Prepared by JRI based on various materials

“numbers,” such as the number of AI service users, the number of AI personnel, and the number of AI-related articles, India suddenly emerges as a country with a major global presence.

This is clearly reflected in various international rankings related to AI (Table 3). In surveys that include many macro-level components, India tends to rank lower. For example, the IMF’s “AI Preparedness Index,” which includes numerous

macro indicators such as the proportion of internet users in the population (Japan 87% vs. India 56%)⁽¹⁾ and the Human Capital Index (quality of education and health, 0–1 <1 is highest>, Japan 0.8 vs. India 0.5)⁽²⁾, places India down at 72nd out of 174 countries/territories (Japan is 12th)⁽³⁾. Microsoft’s “AI Diffusion Index”⁽⁴⁾, which measures the proportion of AI users in the labor force, also ranks India, which has a huge population, only 65th out of 147 countries/territories (Japan is 61st)⁽⁵⁾.

By contrast, in surveys where the target population is limited or where absolute numbers are highlighted, India ranks near the top. In a survey conducted by Boston Consulting Group targeting corporate officers and employees (white-collar workers), the proportion of those using AI on a daily basis (at least several times per week) is 92% in India, and this is the highest figure among the 11 countries/territories surveyed (Japan is 11th)⁽⁶⁾. This is presumed to be related to the relatively high share of IT companies among Indian firms and the large number of IT engineers within the white-collar workforce. In Stanford University’s “Global AI Vibrancy” ranking, India comes third after the U.S. and China, with its ranking being driven by its large numbers of AI personnel (Japan is 9th)⁽⁷⁾.

Table 3 AI-related rankings of major countries/territories

Ranking survey	Publisher	Year	Countries/territories surveyed	Ranking				Subject of evaluation	Main survey components
				1st	2nd	3rd	Other		
Global AI Index	Tortoise Media	2024	83	U.S.	China	Singapore	10th: India 11th: Japan	AI development/utilization capabilities (capacity)	Implementation (human resources, infrastructure, operating environment), innovation (R&D), investment (government strategy, commercial activities)
Global AI Vibrancy	Stanford University	2025	36	U.S.	China	India	9th: Japan	Degree of vibrancy in AI development/utilization	R&D, responsible AI, investment, human resources, policy/governance, public opinion, infrastructure
AI tool usage (questionnaire survey)	Boston Consulting	2025	11	India	Middle East 2)	Spain	11th: Japan	Degree of AI utilization among white-collar workers	Proportion of corporate officers and employees (white-collar workers) who use AI at least several times a week
Number of developers using GitHub	GitHub	2025	(180 million users worldwide)	U.S.	India	China	6th: Japan	Number of IT personnel	Number of users of GitHub IT software development platform
AI Preparedness Index	IMF	2024	174	Singapore	Denmark	U.S.	12th: Japan 72nd: India	Degree of preparedness for AI development/utilization	Digital infrastructure, human resources, technical innovation, legal frameworks
AI Diffusion Index	Microsoft	2025	147	UAE	Singapore	Norway	61st: Japan 65th: India	Degree of AI utilization	Proportion of labor force using AI (calculated based on Windows remote measurement data, etc.)
Government AI Readiness Index	Oxford Insights	2025	195	U.S.	U.K.	France	14th: Japan 21st: India	Degree of readiness for AI utilization in public services	AI infrastructure, development/diffusion, resilience, public sector adoption, policy, governance

Notes 1: The Boston Consulting survey was a questionnaire survey. Microsoft’s calculations were based mainly on its own aggregated data. Other rankings were calculated based on various relevant indicators.

Notes 2: Four countries (Kuwait, Qatar, Saudi Arabia, UAE).

Source: Prepared by JRI based on the following materials:

- Tortoise Media [2024] *The Global Artificial Intelligence Index 2024*, September
- Stanford University Institute for Human-Centered Artificial Intelligence [2025] *Global AI Vibrancy Tool 2025 Release Notes*, November
- Boston Consulting Group [2025] *BCG AI at Work: Momentum Builds, but Gaps Remain*, June
- GitHub [2025] *Octoberse: A new developer joins GitHub every second as AI leads TypeScript to #1*, October 28
- International Monetary Fund [2024] *AI Preparedness Index 2023*, December
- Microsoft AI Economy Institute [2025], *AI Diffusion Report: Where AI is most used, developed, and built*, November
- Oxford Insights [2025] *Government AI Readiness Index*, December

Although AI has not yet permeated the country as a whole, the AI market and the human resources surrounding it have expanded significantly in India. Major U.S. tech companies and AI startups have taken note of India’s significant potential for

AI utilization, and are launching or strengthening operations in India, as well as actively forging partnerships with major Indian domestic IT service companies (Table 4). Among them, the scale of investments made by Microsoft, Google, and

Table 4 AI-related initiatives in India by major U.S. companies

Company	Date of announcement	Summary
Microsoft	May 2023	Launched “Jugalbandi,” a multilingual chatbot designed to improve access to government services for people living in rural areas of India, utilizing Bhashini (the Indian government’s multilingual translation program) for language translation
	February 2024	Announced the ADVANTA(I)GE India project for AI talent education in India, delivering AI education to 500,000 vocational school students, 100,000 female university students, and 250,000 government employees, among others
	January 2025	Announced an investment of \$3 billion to expand AI and cloud infrastructure
	February 2025	Announced a partnership with IndiaAI to accelerate the adoption and development of AI
	December 2025	Announced an additional investment of \$17.5 billion in AI, cloud infrastructure, and related areas over the period 2026–2029, on top of the \$3 billion announced at the start of the year
Google	July 2025	Announced one year of free access to AI Pro (various AI features including generative AI) for university students
	October 2025	Announced plans to build an AI hub in Visakhapatnam, Andhra Pradesh, with an investment of \$15 billion over five years (2026–2030), the company’s largest-ever investment in India
	October 2025	Announced a partnership with Reliance Industries to expand access to AI in India; as part of this initiative, Google Gemini Pro (a multimodal AI assistant) will be offered free of charge for 18 months to young users (aged 18–25) of Reliance Jio Infocomm, a telecommunications carrier
	November 2025	Announced a partnership with Accel (a leading U.S. venture capital firm) to invest in AI startups in India
NVIDIA	August 2023	Announced a partnership with Reliance Industries to jointly develop an India-specific LLM
	September 2023	Announced expanded collaboration with Infosys, including the provision of NVIDIA’s AI technologies and expertise
	October 2024	Released a Hindi-compatible SLM
Meta	October 2024	Announced a partnership with IndiaAI and MeitY to promote AI R&D
	August 2025	Announced the establishment of a joint venture with Reliance Industries to develop AI solutions leveraging Llama (an LLM developed by Meta) for corporate clients in India
OpenAI	August 2025	Announced the launch of the “OpenAI Learning Accelerator” program to support AI adoption among educators and learners in India
	October 2025	Announced one year of free access to ChatGPT Go, a conversational AI tool, for eligible users meeting certain conditions, beginning November 4
	November 2025	Opened its first India office in New Delhi
	January 2026	Held “Nonprofit Jam” workshops in four Indian cities to promote AI adoption among NPOs
Amazon	December 2025	Announced an investment of \$35 billion by 2030, covering expansion of logistics infrastructure, growth of e-commerce merchants, AI utilization in the e-commerce business, and AI-related businesses
Anthropic	February 2026	Opened its first India office in Bengaluru
	February 2026	Announced a partnership with Infosys to provide AI solutions for corporate clients
Perplexity AI	July 2025	Announced a partnership with Bharti Airtel to offer Perplexity Pro (an AI-powered search engine) free of charge for 12 months to Airtel subscribers

Notes: Reliance Industries: A conglomerate with operations spanning oil refining, petrochemicals, retail, and digital services.
 Infosys: A major AI services provider.
 IndiaAI: An independent business division under Digital India Corporation, a non-profit organization established by MeitY.
 MeitY (Ministry of Electronics and Information Technology): The Indian government ministry responsible for electronics and information technology.
 LLM (large language model): A large-scale language model.
 SLM (small language model): A small-scale language model.
 Bharti Airtel: A major telecommunications carrier.

Source: Prepared by JRI based on news releases from the respective companies and various media articles

Amazon is particularly striking. In January 2025, Microsoft announced a \$3 billion investment plan to expand AI and cloud infrastructure in India, and in December of the same year it revealed that it would be investing an additional \$17.5 billion.

Meanwhile, in October 2025, Google announced to invest \$15 billion to build an AI hub in India. The plans include the construction of large-scale data centers, a submarine cable landing station, and power facilities that run on clean energy.

Meanwhile, a \$35 billion investment by Amazon (announced December 2025) appears to include considerable amounts related to AI, though the figure also encompasses expansion of logistics infrastructure and growth of e-commerce merchants.

AI startups are also increasing rapidly in number. According to a Stanford University survey⁽⁸⁾, 434 AI-related startups were founded in India over the preceding decade (2013–2024) (Table 5)⁽⁹⁾. This is less than one-tenth of the 6,956 founded in the U.S., but still the seventh-largest figure in the world. Of these, 74, the fourth-largest number globally, were founded in 2024, confirming that the pace of new startup establishment has recently accelerated compared to other countries⁽¹⁰⁾.

Meanwhile, among major domestic IT service companies in India, there is a growing sense of crisis that their traditional outsourcing businesses, which leverage low costs to compete, may be replaced by AI, potentially eroding business opportunities. As a result, these firms are moving to pro-

actively incorporate AI into their operations and position themselves to handle higher-value-added tasks. The aforementioned partnerships with major U.S. tech companies are part of this effort.

(2) Evolution of India’s AI policy

Even before the release of ChatGPT, the Indian government had already noticed the scale of AI’s potential and influence, and had embarked on an AI policy. In 2018, NITI Aayog⁽¹¹⁾, the government’s policy think tank, unveiled India’s first national strategy on AI, the “National Strategy for Artificial Intelligence #AIforAll” (hereinafter “AI National Strategy”). As conveyed by the hashtag “#AIforAll” the strategy calls for the utilization of AI for economic growth and improvements in quality of life, and is aimed at ensuring that the benefits of AI reach the general population. Five focus areas were identified, namely 1) healthcare, 2) agriculture, 3) education, 4) smart cities and infrastructure, and 5) smart mobility and transportation. The strategy also presented a policy of positioning India as a testbed for AI, implementing diverse initiatives and providing the resulting outcomes to other emerging and developing countries. Through South-South cooperation⁽¹²⁾ in AI solutions, the goal was to establish Indian leadership within the Global South.

Based on the recommendations set forth in the AI National Strategy, various measures have been implemented under the leadership of the central government. The launch in 2020 of the portal site “INDIAai,” which enables easy access to information related to AI, was also in line with these recommendations. As of February 2026, the site offers a wealth of AI-related resources, including more than 3,600 articles, 151 case studies, 512 startup profiles, and 80 learning courses from private-sector companies and other providers⁽¹³⁾.

In 2024, building on the philosophy of “#AIforAll,” the “IndiaAI Mission” was announced. The primary objectives of this initiative are to improve the domestic AI business environment and promote the development of indigenous

Table 5 No. of AI-related startups by country

Country	2013-2024		2024	
	Ranking	No. of companies	Ranking	No. of companies
U.S.	1	6,956	1	1,073
China	2	1,605	3	98
U.K.	3	885	2	116
Israel	4	492	11	36
Canada	5	481	8	51
France	6	468	6	59
India	7	434	4	74
Germany	8	394	5	67
Japan	9	388	9	42
South Korea	10	270	7	52
Singapore	11	239	10	39
Australia	12	178	13	23
Switzerland	13	154	14	22
Spain	14	117	15	18
Netherlands	15	116	12	24

Notes: No. of AI companies that raised new funds.
 Source: Prepared by JRI based on Maslej, Nestor et al. [2025] *The AI Index 2025 Annual Report*, AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, April

AI models. The mission, overseen by the Ministry of Electronics and Information Technology (MeitY), consists of seven projects and has a budget of 103.7 billion rupees (approximately 190 billion yen) for the five years from 2024 to 2029 (Table 6).

Several of these projects will be discussed later.

In September 2025, NITI Aayog released a report titled “AI for Viksit Bharat: The Opportunity for Accelerated Economic Growth.” The report advocates for the use of AI in industry and R&D as a means to achieve the national goal of “Viksit Bharat”⁽¹⁴⁾, i.e., India becoming a developed nation. Specifically, the Viksit Bharat vision is for India to join the ranks of developed countries by 2047, the 100th anniversary of independence.

In October 2025, NITI Aayog released another report, this time with the title “AI for Inclusive Societal Development.” It calls for improving the lives of India’s 490 million informal workers⁽¹⁵⁾⁽¹⁶⁾ through AI and other advanced technologies⁽¹⁷⁾. The report argues that empowering these informal workers is vital for achieving the aforementioned national goal of Viksit Bharat in a way that ensures all citizens benefit. It also states that such

empowerment can be achieved through the use of AI and related technologies.

(3) Main objectives of AI utilization

Like India, other major countries around the world have also been seriously working on the formulation of AI policies since the latter half of the 2010s. How to utilize AI domestically and draw out its benefits to the maximum extent, and, on the other hand, how to suppress the potential negative effects that AI may bring, have become common policy themes across nations. Ultimately, every country aims to use AI to boost its own economic growth and improve the welfare of its citizens.

Within this context, many governments in developed countries place emphasis on improving corporate productivity and strengthening international competitiveness as the route to achieving these objectives. Furthermore, the governments of the U.S. and China are engaging in AI development competition as part of their broader battle

Table 6 Budgets for IndiaAI Mission projects (2024-2029)

Project	Summary	Budget	
		(Million rupees)	Amount in yen (Million yen)
Securing and provision of computing resources	Securing GPUs, which are essential for AI development, and providing them to research institutions and startups at below-market prices	45,634	83,911
Support for development of indigenous foundation models	Supporting selected projects working on indigenous foundation models, including by providing GPUs at reduced cost	19,714	36,250
AI startup support	Providing financial support to startups engaged in AI development	19,425	35,719
AI talent development	Expanding AI education programs at universities and offering AI training courses in regional cities	8,829	16,236
Support for development of AI applications addressing social challenges	Having central government bodies and state governments identify social challenges, and having selected researchers and startups work to address them using AI applications	6,891	12,670
Development and provision of database platforms	Developing and providing “AIKosh Datasets Platform (AIKosh),” a database for training AI models	1,996	3,669
Realization of safe and trustworthy AI	Establishing the “IndiaAI Safety Institute” to advance the realization of responsible AI	205	376
Indirect costs and contingency reserves	–	1,027	1,888
Total	–	103,719	190,719

Notes: Amounts were converted to yen using the exchange rate at the end of 2024 (1 rupee = 1.8388 yen).

Source: Prepared by JRI based on Ministry of Electronics and Information Technology, Government of India [2024] Lok Sabha Unstarred Question No. 1589 to be answered on 04.12.2024, “IndiaAI Mission”, December 4

for global dominance. By contrast, a distinctive feature of the approach of the Indian government is that while declaring its intention to make the country an “AI Powerhouse”⁽¹⁸⁾, it aims to do so in a different sense from the U.S. and China. Specifically, as conveyed by the hashtag “#AIforAll”, India seeks to become an AI Powerhouse in the sense of leveraging AI to address social challenges and achieve inclusive growth, or in other words, economic growth that leaves no one behind.

In India, productivity issues are particularly serious in agriculture, and the Indian government also hopes to bring about improvements in that sector through AI. With manufacturing, however, the issue is not so much productivity as the sector’s low share of the overall economy. From the perspectives of creating jobs, reducing the trade deficit, and lowering dependence on Chinese products, increasing the number of companies engaged in manufacturing is viewed as a more urgent task.

Meanwhile, although India is achieving rapid economic growth, as of 2024 its nominal GDP per capita was still just \$2,695, less than one-tenth of Japan’s \$32,487⁽¹⁹⁾, and it remains classified by the World Bank as a “lower middle-income country”⁽²⁰⁾. What weighs on India’s growth are the nu-

merous, multilayered, and diverse social challenges it faces. The large number of informal workers, highlighted as a problem in the aforementioned report, “AI for Inclusive Societal Development,” is one such example. The AI National Strategy also explains the social challenges India faces in the five fields selected as focus areas (Table 7). The Indian government believes that addressing these social challenges through AI will lead to inclusive growth.

A situation where social problem-solving is prioritized over productivity improvement is not unique to India. It is shared by other emerging and developing countries to varying degrees, and the Indian government’s approach to AI utilization can be characterized as an “emerging-economy model” that differs from that of developed countries. The Indian government is also keenly aware of this, and as noted earlier, the AI National Strategy states that AI-based solutions to social challenges can also be applied to other emerging and developing countries.

How can social challenges be addressed through AI? The Indian government has been taking steps to utilize digital technology to tackle social challenges for some time. And the use of AI, which is itself digital technology, is part of that effort.

Table 7 Social challenges faced by India and proposed AI use cases for addressing them

	Challenges	Proposed AI use cases for addressing challenges
Healthcare	Shortage of healthcare workers; regions with poor access to medical care; high out-of-pocket medical expenses	Telemedicine and remote treatment; medical image analysis; early detection of infectious and communicable diseases
Agriculture	Low productivity; inefficient value chains; declining sustainability (land degradation, rapidly falling groundwater levels, declining effectiveness of pesticides, increasing extreme weather events, etc.)	Real-time advice for farmers; early pest detection; crop price forecasting
Education	High dropout rates even at the primary school level and poor learning outcomes due to issues with the number and quality of teachers	Personalized learning tailored to each student's comprehension level; automation of administrative tasks; predictive identification of students at risk of dropping out to enable timely intervention
Smart cities and infrastructure	Unplanned urbanization giving rise to overcrowding, severe pollution, high crime rates, low living standards	Traffic control to ease congestion; crowd management
Smart mobility and transportation	Inefficient transport systems; frequent traffic congestion and road accidents; inadequate public transportation	Autonomous driving for ride-sharing; semi-autonomous driving assistance; autonomous trucks; automated delivery; engine monitoring; road traffic surveillance

Notes: Challenges and proposed use cases for addressing them presented in *National Strategy for Artificial Intelligence #AIforAll*.
Source: Prepared by JRI based on NITI Aayog [2018] *National Strategy for Artificial Intelligence #AIforAll*

Through AI utilization, existing initiatives for social problem-solving can be strengthened, and in a country as diverse as India, the expectation is that measures can be tailored more precisely to the circumstances and needs of individuals. The AI National Strategy envisions various AI use cases for addressing challenges in the aforementioned five focus areas (Table 7).

Some of these have already been implemented. In the agricultural sector, one example is the “National Pest Surveillance System”⁽²¹⁾, an AI-based pest monitoring system introduced in 2024. Users take a photograph with a mobile phone of a pest or of a crop affected by disease and upload it using a dedicated app. The AI identifies the pest or disease and immediately suggests scientifically supported remedies. The system is expected to improve crop growth and reduce over-dependence on insecticides and pesticides.

2. Initiatives for indigenous AI

(1) Growing momentum for domestic development

In the AI National Strategy, the need to promote AI development was emphasized, and measures such as strengthening AI research at universities were presented. Nevertheless, the speed of implementation has not been particularly rapid. Meanwhile, as various LLMs were developed, mainly in the U.S., and began to be used across diverse fields in India, a view emerged that dependence on foreign countries for AI technologies and infrastructure was undesirable for India’s own economy. There was also a growing recognition that reliance on AI models developed overseas has inherent limitations in terms of addressing India’s social challenges. Against this backdrop, what built up within the Indian government was momentum to promote the development of unique-to-India AI models⁽²²⁾.

A spur was the fact that China’s DeepSeek developed a high-performance LLM at roughly one-tenth the cost incurred by major U.S. tech companies⁽²³⁾, and released it publicly in January 2025⁽²⁴⁾. This created a sense of crisis in India. The concern was that despite also being an emerging country, India was falling significantly behind in AI development. At the same time, it became clear that high-performance LLMs could be developed without the need for enormous expenditures over long periods, which raised expectations among India’s IT community that India also had a chance to compete⁽²⁵⁾.

The development of AI models unique to India aligns with the country’s pursuit of “self-reliance.” Since taking office in 2014, Prime Minister Narendra Modi has called for national self-reliance in various areas. The second Trump administration in the U.S. used tariffs on imports as tools for trade and diplomatic negotiation. India was one of the many countries affected by this, and Modi came to recognize the need for self-reliance even more strongly. In his Independence Day speech on August 15, 2025, the word “self-reliance” appeared 20 times⁽²⁶⁾, far exceeding the five mentions it received the previous year⁽²⁷⁾.

Policies implemented by the Modi administration to date reflect the pursuit of self-reliance⁽²⁸⁾. One of the objectives of the “Make in India” initiative to promote domestic manufacturing (2014) was to reduce dependence on imported goods. In 2020, the government announced the “Atmanirbhar Bharat” (Self-reliant India) policy, which aims for economic self-reliance through further strengthening of the manufacturing sector. Self-reliance in AI is in line with this trajectory. NVIDIA CEO Jensen Huang stated in an interview that when he met Prime Minister Modi in 2023, the Prime Minister told him that just as India should not export flour to import bread, the country should not export data to import intelligence; it should add value to the data itself⁽²⁹⁾.

However, the extent to which “self-reliance” is to be pursued has not been clearly defined. Using the analogy of flour and bread, even if India decided to make bread using domestically produced flour, it would remain unclear whether the ovens

used to bake the bread must also be domestically produced or whether foreign-made ovens would be acceptable. U.S. companies are building data centers in India, and the Indian government is encouraging this⁽³⁰⁾. Regarding GPUs (graphics processing units), which are indispensable for AI data processing, the Indian government is, as described later, purchasing NVIDIA products and offering them domestically at reduced cost while also planning to manufacture indigenous GPUs. Considering these points, it appears that foreign-made “ovens” will be permitted for the time being, with domestic production being a future goal. However, in the “Economic Survey 2025–26” published by India’s Ministry of Finance, it is explicitly stated that with respect to AI, “complete technological self-sufficiency is neither feasible nor efficient”⁽³¹⁾, so it needs to be noted that the Prime Minister’s stance is not universally shared within the Indian government.

How does India’s self-reliance compare with China’s? The Chinese government also calls for scientific and technological “self-reliance and strength”⁽³²⁾, and as part of this, it is pursuing domestic AI development. So at first glance, India’s pursuit of self-reliance appears similar. However, a closer look reveals several major differences. First, China’s AI policy focuses on “strength,” i.e., strengthening the country’s international competitiveness. In this respect, China’s approach is closer to that of developed countries rather than the emerging-economy model of India, which aims to address social challenges and achieve inclusive growth.

Next, China far surpasses India in AI R&D capabilities. In the number of AI-related articles published from 2018 to 2023, China ranked first in the world, with the driver being research institutions and universities such as the Chinese Academy of Sciences (Table 8). India came third, but the number of Indian articles was less than half that of Chinese ones. In addition, China is in the difficult position of dealing with restrictions on imports of certain high-tech products from the U.S. Against this backdrop, indigenous GPUs have been appearing one after another in China, though they are still no match for NVIDIA’s products.

Besides DeepSeek, development of other indigenous LLMs is also progressing, and performance is rapidly approaching that of U.S. models. Furthermore, the expansion of domestic indigenous LLM development is increasing both demand for and the scale of AI cloud computing services provided by companies such as Baidu, Alibaba, Tencent and Huawei. Although both countries advocate self-reliance, China is considerably further ahead than India in strengthening R&D capabilities, and also in developing AI models and AI infrastructure as the outcome of those capabilities.

(2) Development of indigenous AI models and multilingual support

Regarding the promotion of indigenous AI model development, the Indian government is first focusing on accommodating India’s various local languages. This is to facilitate communication within India, which is a multilingual country, and ensure that information and services reach the entire population, including residents in rural areas.

In addition to the 22 languages classified as “scheduled languages” in the Constitution⁽³³⁾, the national census conducted in 2011⁽³⁴⁾ shows that there are 121 local languages each spoken by more than 10,000 people⁽³⁵⁾. Hindi is the federal official language and the most widely used, but it is the mother tongue of only 43.6% of the population (Table 9). Some local languages belong to entirely different language families, and within India there are many cases in which people cannot communicate with one another. English is widely used in business and higher education, but English speakers account for only 10% of the population. Since the census was conducted 15 years ago, the proportions of Hindi and English speakers in the population is likely to have increased due to such factors as improvements in school education⁽³⁶⁾, but India remains a multilingual country.

Multilingualism is a symbol of India’s social diversity, and local languages are closely connected to the history and culture of each region and to the people’s identity. At the same time, multilingual-

Table 8 No. of AI-related articles: By country (2018-2023)

Ranking	Country	No. of articles	Average no. of citations received per article	
			Share (%)	
1	China	375,970	24.0	22.5
2	U.S.	253,026	16.2	39.2
3	India	149,830	9.6	11.3
4	U.K.	74,617	4.8	37.1
5	Germany	65,525	4.2	29.0
6	Japan	54,424	3.5	14.0
7	South Korea	41,656	2.7	26.4
8	Canada	41,543	2.7	31.9
9	France	40,335	2.6	23.7
10	Italy	38,511	2.5	22.3

Notes: Figures are for AI-related articles written in English, and based on the location country of the author's affiliated organization at the time of writing, regardless of the author's nationality. In the case of co-authored articles by multiple authors affiliated with organizations in different countries, each country is counted separately. For example, an article written by a Japanese national affiliated with a U.S. organization is counted under "U.S.", and a co-authored article by a person affiliated with a U.S. organization and a person affiliated with a Japanese organization is counted under both "U.S." and "Japan."

Source: Prepared by JRI based on Emerging Technology Observatory, ETO Research Almanac: Artificial Intelligence (<https://almanac.eto.tech/topics/ai/>)

<Reference 1> No. of AI-related articles: By university / research institution (2018-2023)

Ranking	University / research institution	Location country	No. of articles	Average no. of citations received per article
1	Chinese Academy of Sciences	China	22,601	35.3
2	Tsinghua University	China	12,608	53.0
3	University of Chinese Academy of Sciences	China	12,367	36.7
4	Centre National de la Recherche Scientifique	France	12,162	24.9
5	Zhejiang University	China	10,101	34.8
6	Shanghai Jiao Tong University	China	10,031	34.6
7	Massachusetts Institute of Technology	U.S.	8,058	76.5
8	Carnegie Mellon University	U.S.	7,976	69.2
9	Harbin Institute of Technology	China	7,905	31.7
10	Beihang University	China	7,899	33.4

Notes: Figures are for AI-related articles written in English. In the case of co-authored articles by multiple authors affiliated with different organizations, each organization is counted separately.

Source: Prepared by JRI based on Emerging Technology Observatory, ETO Research Almanac: Artificial Intelligence (<https://almanac.eto.tech/topics/ai/>)

ism makes information transmission and communication across regions difficult. Many of the socially and economically vulnerable groups whom the Indian government particularly wants to reach, such as low-income people, live in rural areas and

often understand only the local language of that region. AI is thus attracting attention as a tool to address the negative aspects of multilingualism, while still respecting India's multilingual nature.

Fine-tuning⁽³⁷⁾ of overseas foundation models

**<Reference 2> No. of AI-related articles: By company
(2018-2023)**

Ranking	Company	Headquarters location country	No. of articles	Average no. of citations received per article
1	Google	U.S.	6,008	196.1
2	Microsoft	U.S.	5,239	99.1
3	Alibaba Group	China	3,488	58.2
4	IBM	U.S.	3,379	50.3
5	Tencent	China	3,313	68.6
6	Amazon	U.S.	2,737	49.7
7	Meta	U.S.	1,899	145.2
8	Baidu	China	1,825	68.9
9	NVIDIA	U.S.	1,651	148.9
10	Adobe Systems	U.S.	1,647	93.0

Notes: Figures are for AI-related articles written in English. In the case of co-authored articles by multiple authors affiliated with different companies, each company is counted separately.

Source: Prepared by JRI based on Emerging Technology Observatory, ETO Research Almanac: Artificial Intelligence (<https://almanac.eto.tech/topics/ai/>)

in India’s various local languages is already underway. For example, Google’s “Gemini” chatbot, which was launched in India in 2024, supports, in addition to English, nine languages that have relatively large numbers of speakers in India. Development of AI models that support India’s local languages is also progressing. However, as the number of supported languages increases, collecting training data becomes more difficult. Normally, one of the main sources of data is websites, but in regions with limited internet access, there are very few websites in the local language to begin with, making this method difficult to employ in practice⁽³⁸⁾.

Specific government measures to overcome these hurdles will be discussed in the next section. Since the government cannot handle everything on its own, universities and private-sector companies sometimes collaborate, working in parallel with the government on various initiatives. A prime example is the “Vaani” project, which has been underway since 2022. The project is being jointly conducted by the Indian Institute of Science (IIS, Bengaluru), ARTPARK (an AI and robotics technology park operated by IIS)⁽³⁹⁾, and Google, with the objective of collecting voice data from across the country and providing it as an open-source resource. Google is mainly providing financing. The

project team aims to visit 773 regions, collect a total of 150,000 hours of audio from one million people, and convert it into digital data⁽⁴⁰⁾. The datasets created so far are available on Bhashini, the government’s local language translation platform, which will be discussed later, as well as on Hugging Face⁽⁴¹⁾.

Google’s involvement in the Vaani project is for the purpose of utilizing its outcomes. In November 2022, the company announced the “1,000 Languages Initiative,” which aims to develop an AI model that supports 1,000 languages worldwide. Presumably, the company is seeking to gain an advantage in the area of language capabilities in order to prevail amid intense AI development competition. As part of the effort, Google DeepMind, the firm’s AI development subsidiary, has been working on the “Morni” project to develop an AI model that understands India’s 125 local languages. However, for many local languages, there was very little digital data, and for 73 languages there was none at all⁽⁴²⁾. This prompted the company to participate in the launch of the Vaani project, as a means of engaging directly in the creation and expansion of digital data.

Table 9 No. of speakers by mother tongue in India (2011 census)

	No. of mother-tongue speakers	
	(1,000 people)	(% of population)
22 scheduled languages	1,171,104	96.7
Hindi	528,347	43.6
Bengali	97,238	8.0
Marathi	83,027	6.9
Telugu	81,128	6.7
Tamil	69,027	5.7
Gujarati	55,493	4.6
Urdu	50,773	4.2
Kannada	43,707	3.6
Oriya (Odia)	37,521	3.1
Malayalam	34,839	2.9
Punjabi	33,125	2.7
Assamese	15,311	1.3
Maihilli	13,583	1.1
Santhali (Santali)	7,368	0.6
Kashmiri	6,798	0.6
Nepali	2,926	0.2
Sindhi	2,772	0.2
Dogri	2,597	0.2
Konkani	2,257	0.2
Manipuri	1,761	0.1
Bodo	1,483	0.1
Sanskrit	25	0.0
Other	39,751	3.3
Population	1,210,855	100.0

Source: Prepared by JRI based on Office of the Registrar General, Government of India [2018] *Census of India 2011, Paper 1 of 2018, Language*

3. Measures for the development of indigenous AI

To promote the development of indigenous AI models, the Indian government has incorporated various attempts into the IndiaAI Mission, as described earlier, and has also introduced additional measures. The main ones are set out below; 1) provision of GPUs as computing resources⁽⁴³⁾, 2) preparation of data necessary for AI training, 3) multilingual support, and 4) support for the development of foundation models.

(1) Provision of computing resources

For training AI models, ample computing resources, including GPUs, are indispensable. The Indian government, specifically the Ministry of Electronics and Information Technology (MeitY), deployed the AIRAWAT (AI Research Analytics and Knowledge Dissemination Platform) super-computer in 2023 at C-DAC⁽⁴⁴⁾ in Pune, Maharashtra, as cloud infrastructure⁽⁴⁵⁾ specialized for AI, in order to make it easier for AI developers to access domestic computing resources⁽⁴⁶⁾. Although it was India's largest and fastest computer, it had only 656 GPUs, far fewer than the more than 10,000 GPUs installed in the computers used by the major tech companies that lead AI development⁽⁴⁷⁾. The development of LLMs, in particular, requires training on enormous volumes of text data, so the country's bottleneck in computing resources remained unresolved.

As part of the IndiaAI Mission, the "IndiaAI Compute Capacity" initiative was launched to share large-scale computing resources domestically. Under this scheme, MeitY procures GPUs through bidding and provides them to research institutions and startups at reduced cost⁽⁴⁸⁾. Through three rounds of bidding conducted from April to May 2025, a total of 34,333 GPUs were secured⁽⁴⁹⁾.

In addition, MeitY Minister Shri Ashwini Vaishnaw announced a plan to enable domestic production of GPUs within the next three to five years⁽⁵⁰⁾. However, how this will be achieved has not been clarified, and feasibility remains uncertain at this stage.

(2) Preparation of data

To develop AI models and AI applications that address the social challenges India faces, large volumes of diverse data unique to India will be required. Therefore, as part of the IndiaAI Mission, MeitY built the AIKosh Datasets Platform (AIKosh)⁽⁵¹⁾, with the aim of making such datasets

easily accessible and usable and thereby promoting AI development.

On the AIKosh platform, non-personal datasets, models, toolkits, and other resources are provided. As of the end of May 2026, nearly 12,000 datasets have been accumulated. Many of these are provided by the government and government-related organizations. Their contents range widely, from query records submitted to the farmer call center operated by the Ministry of Agriculture and Farmers Welfare (including the farmer's location, inquiry details, and responses), to region-specific information on pension payments made under the National Social Assistance Programme (provided by the Ministry of Rural Development) and information on the extraction of minerals in the states of Karnataka and Andhra Pradesh (provided by the Ministry of Mines).

An interesting point is that data providers can decide for themselves how to share their datasets. Specifically, for each dataset they provide, they can choose from three options, namely 1) "open," whereby the dataset can be searched and downloaded, 2) "restricted," whereby the dataset can be searched but downloading requires approval from the data provider, and 3) "private," whereby only the data provider can download the dataset. The "private" option exists for cases in which the data provider wishes to employ the tools available on the AIKosh platform to conduct AI development using their own data. Presumably, the flexibility in terms of the options offered is intended to encourage as many data owners as possible to provide data.

(3) Multilingual support

Regarding support for India's various local languages, in addition to the aforementioned Vaani project from Google and others, various other initiatives are being advanced across industry, government, and academia⁽⁵²⁾. Among them, the Indian government is focusing in particular on the Bhashini program⁽⁵³⁾. This program, which began in 2022 under MeitY, allows India's local lan-

guages to be entered as data and performs translation⁽⁵⁴⁾. The aim is to enable all citizens to use the language they are most comfortable with in online interactions.

Bhashini employs multiple methods to overcome the difficulty of collecting digital data for local languages⁽⁵⁵⁾, one of which is crowdsourcing⁽⁵⁶⁾ from citizen volunteers. This initiative, named "Bhasha Daan" (language donation), calls on people nationwide to volunteer by providing text and voice data in local languages. Specifically, for each language, volunteers are asked to 1) listen to prepared audio and transcribe it, 2) read aloud prepared text, 3) translate prepared text from one language into another, and 4) describe what is shown in prepared images. In addition, they are asked to 5) verify whether work performed by others in tasks 1) through 4) is correct.

Based on the local language data collected in this way, Bhashini provides multiple translation services⁽⁵⁷⁾ and offers APIs⁽⁵⁸⁾ for companies that wish to use these functions. Translation is possible not only for text but also for audio, and users can choose from 1) text-to-text, 2) text-to-audio or audio-to-text, and 3) audio-to-audio translation. In India, a significant proportion of people are not comfortable with text input, and Bhashini thus emphasizes a "voice-first" approach.

An example of Bhashini in use is the chatbot "Kisan e-Mitra," introduced in 2023 under the government's PM-Kisan benefit program for small farmers⁽⁵⁹⁾. Through integration with Bhashini, the chatbot currently supports 11 local languages, with plans to support all 22 scheduled languages in the future. Users input inquiries about benefits or application status into the mobile app using voice or text, and the chatbot immediately identifies the language and responds in that language⁽⁶⁰⁾. With language barriers removed, the service is expected to be used by a larger number of people.

(4) Support for the development of foundation models

The development of general-purpose founda-

tion models requires substantial financial resources, and it is difficult to compete with the high-performance foundation models already being provided by overseas companies, mainly from the U.S. and China. Against this backdrop, private-sector companies involved in foundation model development in India remain limited, and instead the mainstream trend is to develop AI applications that connect with overseas foundation models via APIs, as this can be done relatively easily. According to data from NASSCOM [2025]⁽⁶¹⁾ on the amounts of financing raised by generative AI startups by field, “applications” account for nearly 90% of the total, while “models/infrastructure” account for only 4% (Fig. 1).

Although small in number, indigenous foundation models have begun to appear⁽⁶²⁾, but overall they have shallow contextual understanding and low reasoning ability⁽⁶³⁾. This inferior performance compared to overseas foundation models leaves considerable room for improvement.

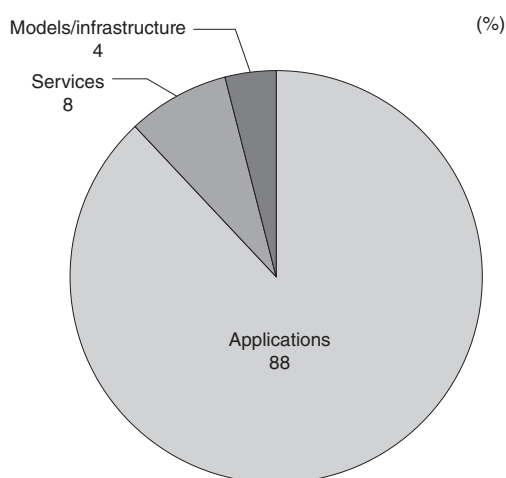
Under these circumstances, the IndiaAI Mission supports, as noted earlier, the development of indigenous foundation models tailored to India’s unique conditions, particularly India’s various lo-

cal languages. The main forms of support are financial assistance and the provision of GPUs to selected developer companies and development initiatives. Four initiatives were chosen in the first round⁽⁶⁴⁾ and eight in the second round⁽⁶⁵⁾, for a total of twelve development initiatives (Table 10).

Looking at the backgrounds of the founders, including co-founders, of the selected companies, five of the nineteen have studied at universities in the U.S., and many have career experience either at U.S. companies in the U.S. or at U.S. companies operating in India (Table 11). In addition, among the selected companies are ones whose founders are Indian but whose headquarters are in the U.S. (Gan.ai and Genloop), and a company with dual headquarters in India and the U.S. (Fractal Analytics)⁽⁶⁶⁾. Even from these few examples, the depth of India-U.S. connections is conveyed.

Below, as examples from among the selected companies/initiatives, the developments with Sarvam AI and BharatGen are outlined. Sarvam AI was the first company selected in the first round, while BharatGen was selected in the second round and received the most generous support, drawing significant attention.

Fig. 1 Funding volume of generative AI startups in India: Shares of fields to which funding was provided (2024)



Source: Prepared by JRI based on NASSCOM [2025] *India Generative AI Startup Landscape 2025: Mapping the Momentum*, August

(a) Sarvam AI

Sarvam AI is a startup established in 2023 that is working on the development of indigenous foundation models. Its most recent foundation model, Sarvam M, released in May 2025, is a fine-tuned version of the French company Mistral AI’s foundation model Mistral Small 3, and supports 10 Indian languages⁽⁶⁷⁾. Sarvam is currently developing the following three foundation models, which are being built domestically from scratch, without the use of existing ones:

- Sarvam-Large, which is capable of advanced reasoning and content generation
- Sarvam-Small, a lightweight version for real-time conversational applications
- Sarvam-Edge, which can run on mobile devices and IoT platforms

The company’s two founders, Vivek Raghavan and Pratyush Kumar, come from AI4Bharat, a research lab at IIT⁽⁶⁸⁾ Madras, and AI4Bharat is

Table 10 Companies/initiatives selected for IndiaAI Mission indigenous foundation model project

Company	Founded	Headquarters	Development initiative	Development initiative	
				No. of parameters	Description
Sarvam AI	2023	Bengaluru	LLM	70 billion	Multilingual support
Soket AI Labs	2019	Gurugram	LLM	120 billion	Defense, healthcare, and education sectors
Gan.ai	2021	Mountain View (U.S.)	LLM	70 billion	Text-to-speech conversion
Gnani.ai	2016	Bengaluru	Voice foundation model	14 billion	Multilingual, real-time voice processing
Avataar.ai	2015	Bengaluru	LLM	Up to 70 billion	Multilingual support; agriculture, healthcare, and governance sectors
BharatGen	2024	(IIT Bombay (Mumbai))	Multimodal model	2 billion to 1 trillion	Multilingual support; agriculture, finance, legal, healthcare, and education sectors
Fractal Analytics	2000	Mumbai / New York (U.S.) (dual headquarters)	Large reasoning model	Up to 70 billion	STEM and healthcare sectors
Tech Mahindra Makers Lab	2014	(Pune and other locations)	LLM	8 billion	Multilingual support
ZenteiQ.ai	2022	Bengaluru	Multimodal model	8 billion to 80 billion	Engineering sector
Genloop	2023	Santa Clara (U.S.)	SLM	2 billion	Support for all 22 scheduled languages
Intellihealth Solutions	2019	Mumbai	LLM	20 billion	Brainwave signal analysis
Shodh AI	2024	Jaipur	SLM	7 billion	Materials science sector

Notes 1: BharatGen is an initiative, not a company name. The year shown is the year the initiative commenced.
 Notes 2: Tech Mahindra Makers Lab is the R&D division of Tech Mahindra, an IT consulting and services company.
 Notes 3: LLM (large language model); SLM (small language model).
 Notes 4: Mountain View and Santa Clara are located in Silicon Valley.
 Notes 5: Fractal Analytics was originally headquartered in Mumbai, but established an additional headquarters in the U.S. in 2005.
 Notes 6: "Multilingual" in the description column refers to the various local languages spoken within India.
 Source: Prepared by JRI based on Ministry of Electronics & Information Technology, Government of India, "India's Common Compute Capacity Crosses 34,000 GPUs, 3 More Startups to Develop and Deploy Indian Foundation Models" (press release), May 30, 2025, Ministry of Electronics & Information Technology, Government of India, "Government of India Unveils the Logo and Key Flagship Initiatives for the India-AI Impact Summit 2026" (press release), September 18, 2025, and others

cooperating in the development. The models are designed to accommodate India’s circumstances, supporting the country’s various local languages and being voice-first. As a selected company for the IndiaAI Mission, the firm was able to secure 4,096 NVIDIA H100 GPUs at reduced cost for six months.

(b) BharatGen

BharatGen is a government-backed initiative to build indigenous foundation models. With support from the Ministry of Science and Technology, a consortium that includes multiple IITs was formed in 2024 under the leadership of IIT Bombay’s Technology Innovation Hub, and it is working to develop a foundation model that supports all 22 scheduled languages. The aim is to create a mul-

timodal model that integrates and processes text, audio, image, and video data. In addition, by making it an open model, such that anyone can access, download, and modify the source code, the initiative seeks to enable the public and private sectors to distill the model and actively develop AI models suited to India’s circumstances. Distillation is a technique in which the training data of a large, high-performance AI model (teacher model) is transferred to a smaller model (student model). This allows the smaller model to deliver performance close to that of the original model, while reducing compute costs.

Among the selected initiatives for the IndiaAI Mission, BharatGen received the largest amount of financial support, 9.886 billion rupees (approximately 17 billion yen), and secured 13,640 NVID-

Table 11 Founders of companies selected for IndiaAI Mission indigenous foundation model project and their backgrounds

Company (founded)	Headquarters	Founder	Educational background		Career background
Sarvam AI (2023)	Bengaluru	Vivek Raghavan, Co-Founder	IIT Delhi (B.Tech. in Electrical Engineering); Carnegie Mellon University (U.S., Ph.D. in Electrical and Computer Engineering)		Unique Identification Authority of India
		Pratyush Kumar, Co-Founder	IIT Bombay (B.Tech.); ETH Zurich (Switzerland, Ph.D. in Computer Engineering)		IBM (India); Microsoft (India); One Fourth Labs (Co-Founder); AI4Bharat (Co-Founder)
Soket AI Labs (2019)	Gurugram	Abhishek Upperwal, CEO/ Founder	Indian Institute of Science (M.Tech. in Computational and Data Sciences)		Merkle Labs (Co-Founder), Qubit Technologies (Co-Founder)
Gan.ai (2021)	Mountain View (U.S.)	Suvrat Bhooshan, Founder & CEO	Stanford University (U.S., M.S. in Computer Science)		Facebook (U.S.)
Gnani.ai (2016)	Bengaluru	Ganesh Gopalan, CEO & Co-Founder	University of Mumbai (B.E.); Indian School of Business (MBA)		IBM (India); Satyam Infoway; Texas Instruments (India)
		Ananth Nagaraj, Co-Founder & CTO	Visvesvaraya Technological University (B.E. in Electronics and Communication Engineering)		Texas Instruments (India); 300 Feet Eco Solutions (Co-Founder)
		Bharath Shankar, Co-Founder, Chief Product and Engineering Officer	B.M.S. College of Engineering (B.E.)		IBM (India)
Avataar.ai (2015)	Bengaluru	Sravanth Aluru, Founder & CEO	IIT Bombay (B.Tech.); The Wharton School (U.S., MBA)		Microsoft (India); Deutsche Bank (U.S., India)
		Gaurav Baid, Co-Founder	University of Delhi (MBA)		Deutsche Bank (India); <after departure> Titan Capital
Fractal Analytics (2000)	Mumbai / New York (U.S.) (dual headquarters)	Srikanth Velamakanni, Co-Founder, Group Chief Executive & Executive Vice Chairman	IIT Delhi (B.Tech. in Electrical Engineering); Indian Institute of Management Ahmedabad (MBA)		ICICI Bank; ANZ Investment Bank (India)
		Pranay Agrawal, Co-Founder and CEO	Indian Institute of Management Ahmedabad (MBA)		ICICI Bank
		Nirmal Palaparathi, Co-founder and Chief Architect	IIT Madras (B.Tech. in Computational Engineering); Indian Institute of Management Ahmedabad (MBA)		<after departure> National University of Singapore Institute of Systems Science (Lecturer, Consultant)
		Predeep Suryanarayan, Co-Founder	IIT Kanpur (B.S.)		<after departure> UST Alpha AI (U.S.)
		Ramakrishna Reddy, Co-Founder	Indian Institute of Management Ahmedabad (MBA); Jawaharlal Nehru University (M.A. in Political Philosophy)		<after departure> Manthan International School (Co-Founder); CuriousEd (Co-Founder)
ZenteiQ.ai (2022)	Bengaluru	Sashikumaar Ganesan, Founder	Otto-von-Guericke-Universität Magdeburg (Germany, Ph.D. in Computational and Applied Mathematics)		Indian Institute of Science (Professor)
Genloop (2023)	Santa Clara (U.S.)	Ayush Gupta, CEO	Stanford University (U.S., M.S. in Electrical Engineering); Netaji Subhas Institute of Technology (B. Tech.)		Apple (U.S.)
Intellihealth Solutions (Truemed) (2019)	Mumbai	Akshat Nayyar, Co-Founder	Virginia Tech (U.S., M.S. in Civil Engineering); Indian School of Business (MBA)		Abbott (India)
		Kunal Wani, Co-Founder	Thunderbird School of Global Management (U.S., MBA); K.J. Somaiya Medical College (M.B.B.S.)		Abbott (India)
Shodh AI (2024)	Jaipur	Arastu Sharma, CEO	University of Cambridge (U.K., Ph.D. in Physical Engineering and Applied Physics)		University of Cambridge (U.K., Researcher)

Notes 1: Of the entities administering the 12 initiatives selected for the IndiaAI Mission's indigenous foundation model project, this covers the 10 companies, i.e., excludes BharatGen (an initiative) and Tech Mahindra Makers Lab (the R&D division of Tech Mahindra, an IT consulting and services company).

Notes 2: IIT (Indian Institute of Technology): 23 IITs across India.

Notes 3: Mountain View and Santa Clara are located in Silicon Valley.

Notes 4: Fractal Analytics was originally headquartered in Mumbai, but established an additional headquarters in the U.S. in 2005.

Notes 5: In the "career background" column, for companies based outside of India, the location of employment is shown in parentheses. <after departure> indicates career experience gained after leaving the company.

Source: Prepared by JRI based on LinkedIn and other sources

IA H100 GPUs at reduced cost for 12 months⁽⁶⁹⁾.

4. AI and digital public infrastructure

(1) AI as digital public infrastructure

Underlying the Indian government's AI policy is the concept of digital public infrastructure (DPI). DPI refers to online infrastructure designed to make it easier for the public and private sectors to provide digital services. Since it is infrastructure, it is regarded as natural that the government develops it, just as with roads and water systems. And by making it open to a wide range of users, the government is seeking to prevent monopolization by specific large companies. The hope is that the public and private sectors will use this infrastructure to develop diverse digital services and that digital transformation (DX) will progress in a way that benefits the entire population⁽⁷⁰⁾. DPI does not include technological foundations such as the internet or communication networks. These are referred to as "digital infrastructure," distinguishing them from DPI. DPI is built on top of "digital infrastructure," and on top of DPI, various digital services will be developed by the public and private sectors.

India's DPI includes Health Stack in the health-care sector and Agri Stack in the agricultural sector, but India Stack, the first to be built, has won particular acclaim both domestically and internationally. India Stack is a collection of open APIs built around Aadhaar, the personal identification number system operated by the Unique Identification Authority of India (UIDAI)⁽⁷¹⁾. It consists of three pillars, each with its own purpose: 1) reliable identity verification, 2) personal data management/utilization, and 3) promotion of electronic payments. Multiple functions have been developed for each. If there is a function that private-sector companies or authorities such as state

governments or other central government bodies wish to employ, they can use the relevant API to connect the function with their own application.

In AI policy as well, the government positions the infrastructure necessary for AI development as a form of DPI, and seeks to promote AI development in both the public and private sectors by building this infrastructure itself and making it open. This is because leaving everything to free competition in the market could result in specific companies monopolizing AI, which could make it accessible only to a small number of privileged parties.

Regarding this point, MeitY Minister Shri Ashwini Vaishnaw has stated that adopting a DPI approach in the AI field is intended to democratize access to AI⁽⁷²⁾. He explains that this means enabling anyone to easily access AI and benefit from it. Specifically, he states that the government is working to build a public platform equipped with computing power, high-quality datasets, protocols⁽⁷³⁾, and technical and legal frameworks. Examples are the securing of computing resources (34,333 GPUs) and the construction of datasets (AIKosh), which are measures incorporated into the IndiaAI Mission. The local language translation platform Bhashini is also regarded as DPI in the sense that it removes language barriers⁽⁷⁴⁾.

(2) Strengthening of digital public infrastructure with AI

While the Indian government has been working on building DPI for AI, that is, the infrastructure necessary for the development of AI, at the same time it has started working on strengthening the DPI it has already built using AI. AI is being used to deploy chatbots to improve the convenience of DPI, to monitor unnatural movements during identity verification in order to strengthen security, and to enhance biometric authentication systems.

Among these initiatives, India-specific uses of AI include multilingual support, voice support, and the expansion of biometric authentication.

The Indian government intends for people who cannot communicate smoothly unless they use a local language, people with low literacy or digital literacy, people who have difficulty entering text into devices, and other socially and economically vulnerable individuals to benefit from DPI.

This intention can be seen in the examples of Aadhaar, and Aadhaar-based identity verification, administered by UIDAI⁽⁷⁵⁾, and UPI, the cashless payment platform operated by the National Payments Corporation of India (NPCI), which are discussed below.

First, regarding Aadhaar-based identity verification, fingerprint and iris authentication functions already existed, but AI-based facial recognition⁽⁷⁶⁾ was newly added to the biometric authentication lineup in 2022. It was introduced because iris authentication systems have not become widespread, partly due to their relatively high cost, and also because fingerprint authentication is difficult for some people, whose fingerprints are faint due to skin conditions or manual labor. Part of the reason biometric authentication is used in Aadhaar-based identity verification is to help people who have difficulty remembering PIN numbers.

Progress is also being made with multilingual and voice support for Aadhaar. UIDAI, in collaboration with Sarvam AI, the aforementioned startup engaged in the development of indigenous foundation models, has 1) introduced a function that allows users to check the status of Aadhaar registration and updates through voice conversation, 2) introduced a function that detects suspicious movements during Aadhaar-based identity verification and notifies Aadhaar holders in real time, and 3) made these functions compatible with India's 10 local languages (2025).

With UPI, too, progress is being made with providing multilingual and voice support. In 2022, NPCI introduced "UPI 123PAY," which allows UPI to be used not only on smartphones, but also on feature phones without internet connectivity. Since then, through integration with Bhashini, the aforementioned local language translation platform, the number of local languages supported has been increased from the initial five to twelve now.

"Hello! UPI" was also introduced (in 2024) to enable payments through voice commands instead of text-based messaging, using AI. When using the service via a smartphone, the user opens the UPI app, selects the voice command option, and says, for example, "Send money to XX." The app then asks for confirmation of what was said, either on screen or by voice. When the user presses the OK button and enters their PIN, the transfer is completed. The service currently supports only English and Hindi, but there are plans to expand the number of supported languages.

In 2025, as alternatives to entering a PIN, fingerprint authentication or facial recognition became available for identity verification during UPI transactions.

This is intended not only to improve convenience but also to accommodate people who have difficulty remembering PIN numbers, much like with Aadhaar-based identity verification. This system uses biometric data that is stored in the Aadhaar system (Aadhaar Data Vault).

India's efforts to strengthen DPI through the use of AI have only just begun, and are expected to advance further. There are also moves to employ AI when introducing new DPI. The FY2023 national budget proposal included the building of a network to make it easier for farmers to access agricultural information, and this was presented as a form of DPI for the agricultural sector. In response, the Ministry of Agriculture and Farmers Welfare has been leading the construction of VISTAAR⁽⁷⁷⁾, which also incorporates the use of AI for local language use and advice provision⁽⁷⁸⁾.

Meanwhile, the Indian government has begun offering DPI to other emerging and developing countries⁽⁷⁹⁾. Strengthening DPI through AI will serve as a driving force for this, as it will allow India to present stronger advantages to partner countries. The need for multilingual support, voice support, and biometric authentication is likely to be high in other emerging and developing countries, too, and equipping DPI with these features is expected to increase its attractiveness and encourage more countries to adopt it. Although multilingual support is being developed for domestic use within India and thus cannot be exported as

is, methods for collecting data on local languages and technologies for translation will be useful in many multilingual countries around the world, especially in Africa. By strengthening such South-South cooperation, the Indian government aims to move closer to its goal of becoming the leader of the Global South.

5. Future outlook

(1) Issues surrounding data

In line with the hashtag “#AIforAll” the Indian government has pursued AI policy with the main focus on addressing social challenges and achieving inclusive growth. For the time being, it is concentrating on multilingual support, aiming to enable all citizens to communicate with and receive information from authorities in their local languages. This is because communication in any domain rests on the premise that people can understand one another. Once language barriers are removed, the possibilities for AI utilization will expand further. For example, it will become possible to provide more finely tailored administrative services that match individual circumstances. Private-sector companies, by using foundation models with multilingual support, will also be able to communicate more easily with residents in rural areas, which has been difficult until now, and this is expected to lead to the creation of new businesses aimed at addressing social challenges, such as the provision of telemedicine and online education.

However, it is hard to see India achieving “self-reliance” in AI development and operation in the near future. The biggest reason is the insufficiency of industrial infrastructure, namely unstable power supply and severe water shortages. This problem has already had negative effects across many sectors, and could become a bottleneck in AI development, which requires large amounts of elec-

tricity and resources for cooling. India faces many other challenges, but issues concerning data and R&D capabilities are particularly serious.

The issue with data is that there is little data available for training. Although the potential is large, data is not being fully utilized.

In India, enormous amounts of data are generated by DPI. The number of UPI transactions reached 155 billion in 2025⁽⁸⁰⁾, which, according to simple arithmetic, translates into roughly 400 million transactions per day. In addition, large volumes of data exist within the government. And in the private sector, too, data related to digital services such as electronic payments, e-commerce, social media, and ride-sharing is continuously being generated as such services proliferate. At present, much of this sort of data is stored in isolation within each organization. If such data were made open to a wide range of users under strict rules that ensure the protection of privacy and trade secrets, and if analog information were converted into digital data, India as a whole could maintain huge datasets. Needless to say, a system to ensure strict compliance with the rules will be essential.

Efforts to enable smooth access to data have already begun. As noted earlier, the Indian government has started providing datasets on the AIKosh platform. In addition, BharatGen, which is engaged in the development of an indigenous foundation model, is working to create Bharat Data Sagar, a repository of text, audio, and image data that includes minority languages and dialects. Meanwhile, iSPIRT⁽⁸¹⁾, a private volunteer organization that contributed greatly to the development of India Stack, has proposed the concept of a “confidential clean room,” based on the mechanism of a data clean room⁽⁸²⁾, as a system that can enable AI model training while protecting privacy⁽⁸³⁾.

In any case, the training data provided must be of high quality, i.e., accurate, complete, and consistent⁽⁸⁴⁾, or else it will be impossible to create high-precision AI models. Collecting large amounts of data and then organizing it to improve quality involves considerable cost and requires specialized personnel, and it must be done continuously rather than only once. Whether devel-

oping indigenous models or fine-tuning overseas models, addressing these data-related issues will be crucial.

(2) Weak R&D capabilities pose an obstacle

In addition to data, weak R&D capabilities stand in the way of India achieving “self-reliance” in AI development and operation.

India is widely known as a major supplier of IT personnel. Data from GitHub, one of the world’s largest IT software development platforms with 180 million users, shows that India has 21.9 million users as of September 2025, putting the country second after the U.S., which has 28 million, but ahead of China, which is in the third place (Table 3)⁽⁸⁵⁾. GitHub predicts that by 2030, India’s users will reach 57.5 million, putting it at the top above the U.S., which is projected to have 54.7 million users.

India can also expect to see a steady increase in AI personnel. Of the students enrolled at higher education institutions, 9.85 million, or 20%, are in STEM fields, i.e., science, technology, engineering, and mathematics (as of FY2021)⁽⁸⁶⁾, and momentum is growing to strengthen AI education for this group. As noted earlier, major domestic IT service companies in India are also actively adopting AI, and are working to equip their IT personnel with AI skills.

Although India has an abundance of IT and AI personnel, the number of AI personnel with the advanced knowledge and skills necessary to create cutting-edge AI models is extremely small. Indian universities tend to place more emphasis on education than on research⁽⁸⁷⁾, and many students who wish to conduct advanced research go overseas, such as to the U.S. As noted earlier, India ranked third in the world for the number of AI-related articles published from 2018 to 2023, after China and the U.S., but the average number of citations received per article was 11.3, compared with 22.5 for China and 39.2 for the U.S., putting India bottom among the top 10 countries, which sug-

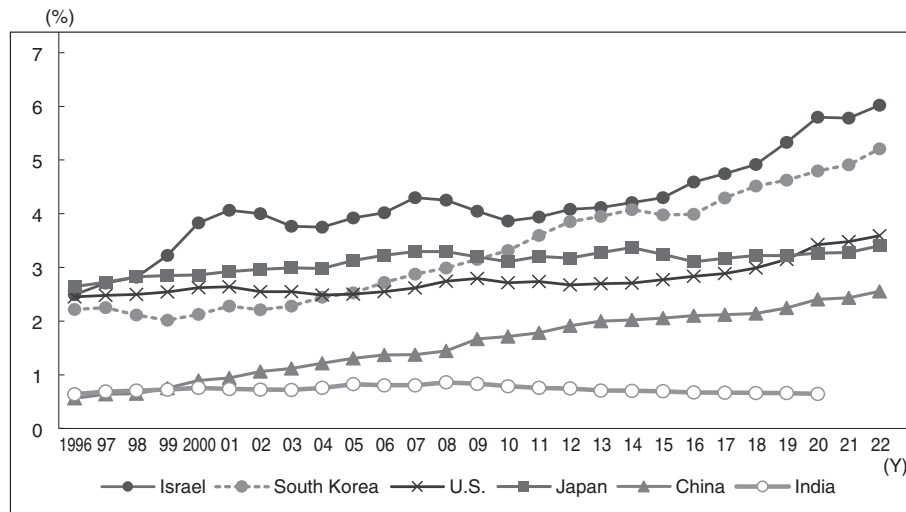
gests that quality is not necessarily accompanying quantity (Table 8). Furthermore, among the 100 most cited AI-related articles from 2021 to 2023, India does not appear among the top 10 countries by author nationality⁽⁸⁸⁾. Meanwhile, companies have tended not to take a long-term perspective, putting low priority on the allocation of resources to R&D. This is because they can enjoy the short-term advantage of low labor costs.

Reflecting India’s lack of emphasis on R&D, the country’s total R&D investment as a share of nominal GDP is just 0.65%, far below the figures for the U.S. (3.59%), Japan (3.41%), and China (2.56%)⁽⁸⁹⁾ (Fig. 2). Moreover, this figure has remained more or less unchanged for over 20 years. Looking at shares of India’s R&D investment by sector, the government accounts for about half, which is high by international standards (Fig. 3). This is probably because universities and companies invest so little, rather than because the government invests aggressively. Government investment appears to be highest in defense-related areas⁽⁹⁰⁾.

In November 2025, to address the issue and promote private-sector-led R&D, the Indian government established a fund of one trillion rupees (approximately 1.7 trillion yen) called the Research Development and Innovation Scheme Fund. The plan is for the fund to support projects to deploy advanced technologies, improve access to strategically important technologies, and promote deep-tech startups⁽⁹¹⁾. However, it is expected to take considerable time before the outcomes become visible.

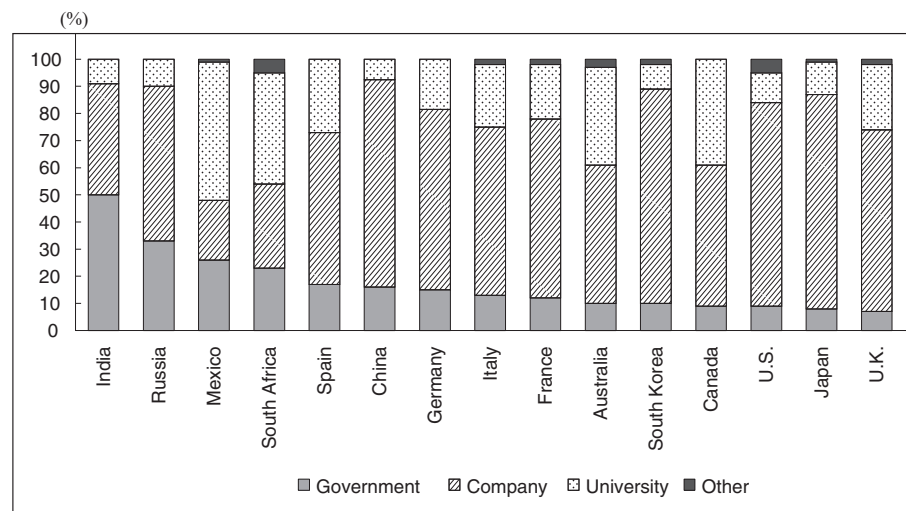
Given that it is difficult to see India achieving “self-reliance” in AI development and operation, the majority of AI solutions developed in India will likely utilize high-performance overseas foundation models. Indigenous foundation models will mainly be used in cases where India-specific circumstances, such as multilingual support, need to be reflected. In other words, indigenous models are expected to complement, rather than replace, overseas models.

Fig. 2 Ratio of R&D investment to nominal GDP



Source: Prepared by JRI based on World Bank database

Fig. 3 R&D investment by major countries: By investing entity (2020)



Notes: Breakdown of total domestic R&D expenditure. Presented in descending order of government's share from left to right.

Source: Prepared by JRI based on Department of Science & Technology, Government of India [2023] *Research & Development Statistics at a Glance 2022-23, March*

(3) A path different from the U.S. and China

Even though the likelihood of achieving “self-reliance” may be small, India has ample potential to address social challenges and move closer to “#AIforAll”. This is because for such initiatives,

understanding India’s on-the-ground realities and responding appropriately will be more important than R&D strength. Aadhaar (personal identification number) and UPI (cashless payment platform), which have attracted global attention, were not developed using cutting-edge technologies. Instead, they were schemes that accurately addressed India-specific problems, such as difficulty

in identity verification and reliance on cash, and were therefore widely accepted.

A word that encapsulates India's innovation is *jugaad*. It refers to making do with limited available resources. In space development, India has achieved major results through *jugaad*, such as strict cost control and the application of existing technologies, even with low budgets⁽⁹²⁾ According to the spirit of *jugaad*, one would use whatever is available, be it domestic or foreign. While this may make it difficult to independently develop cutting-edge AI, it is sufficient for generating AI use cases aimed at addressing social challenges. And from among these use cases, innovative solutions that are attractive to other emerging and developing countries may emerge.

In the field of AI, global attention will continue to focus on how far U.S. companies can push out the frontier, and how close Chinese companies can come to that frontier or how it may evolve independently. Alongside this, India is expected to continue developing AI solutions aimed at addressing diverse social challenges. If these solutions are adopted as model examples among emerging and developing countries, this will contribute to enhancing India's presence in the Global South. We can thus envision a future in which India expands its global influence in the AI field through establishing a position in the world distinct from those of the U.S. and China.

End Notes

1. The survey was by the World Bank, and the figures are for 2023 for Japan and 2022 for India.
2. 2020 survey by the World Bank.
3. IMF AI Preparedness Index website (https://www.imf.org/external/datamapper/AI_PI@AIPI/ADVEC/EME/LIC, accessed December 25, 2025)
4. Proportion of AI users in the labor force. AI user numbers were calculated based on sources such as remote measurement data aggregated independently by Microsoft via Windows.
5. Microsoft AI Economy Institute [2025]
6. Boston Consulting Group [2025]
7. Stanford University [2025]
8. Maslej et al. [2025]
9. Strictly speaking, this was the number of AI companies that raised at least \$1.5 million in new funding.
10. The number of U.S. startups includes companies founded by Indians in the U.S. According to Neufeld et al. [2025], among the 50 companies selected by Forbes magazine for the Forbes 2025 AI 50 List, 42 have their headquarters in the U.S., and of those, 25 were founded or jointly founded by immigrants. By country of birth, India was top with nine companies, followed by China with eight and France with three. Most founders attended U.S. universities and then remained in the U.S., where they founded the companies.
11. The official name is the National Institution for Transforming India. The prime minister serves as chairman, the NITI Aayog's top post.
12. Refers to cooperation among developing countries. Specifically, it denotes support by one developing country, in a field in which it is strong, to other developing countries.
13. INDIAai website (<https://indiaai.gov.in/indiaaiportal>, accessed February 9, 2026)
14. Advocated in 2021 by Prime Minister Modi.
15. Informal workers (the official term used is "unorganized workers") as defined by the Indian government refers to home-based workers, self-employed workers, and wage-earning workers in unorganized sectors, etc. The category includes almost all artisans and service-sector workers, as well as primary-industry workers, who account for 45% of all workers.
16. The source for the figure is International Labour Organization [2024] "India Employment Report 2024." According to this report, of the total 540 million workers in 2022, there were 51.6 million regular employees (working in the formal sector, 9.5%) and 490 million informal workers (90.5%). The breakdown of these 490 million is as follows: 66.5 million non-regular employees working in the formal sector, 120 million casual workers, and 300 million self-employed workers. Among the self-employed workers, 95.8 million were family members working unpaid.
17. In the report, a roadmap titled "Mission Digital ShramSetu" was proposed to ensure that all workers, including informal workers, can access AI and benefit from it.
18. Press Information Bureau, Government of India, "India's AI Revolution: A Roadmap to Viksit Bharat," March 6, 2025
19. World Bank database.
20. The World Bank classifies countries into the following four income groups based on gross national income (GNI) per capita (2024–2025). India's per-capita GNI is \$2,540 (2023).
 - Low-income countries: \$1,145 or less
 - Lower middle-income countries: \$1,146-\$4,515
 - Upper middle-income countries: \$4,516-\$14,005
 - High-income countries: \$14,006 or more
21. Introduced by the Ministry of Agriculture and Farmers Welfare, the system currently supports 61 types of crop and 44 languages (as of March 2025). (Ministry of Agriculture & Farmers Welfare, Government of India, "National Pest Surveillance System" <press release>, March 25, 2025)
22. Moves to develop and operate AI models independently within one's own country are often discussed in terms of "sovereign AI." Although there is no fixed definition of "sovereign AI," it is generally said to refer to establishing sovereignty in AI, or more specifically, enabling a country to manage and control 1) technology, 2) data, and 3) operations related to AI without depending on foreign countries. One means of achieving this is the independent development and operation of AI models.
23. According to DeepSeek, the V3 model was trained using 2,048 H800s, NVIDIA's lower-performance GPUs, and the development cost was approximately \$5.5 million. ("DeepSeek's release of an open-weight frontier AI model," IISS, April 2025, <https://www.iiss.org/publications/strategic-comments/2025/04/deepseek-release-of-an-open-weight-frontier-ai-model/>, accessed

- November 13, 2025)
24. Regarding DeepSeek, questions have been raised about whether the development cost was really as low as claimed and whether OpenAI's data was improperly used.
 25. "India IT minister praises DeepSeek's low-cost AI, compares it with own investment approach," Reuters, January 31, 2025 (<https://www.reuters.com/technology/india-it-minister-praises-deepseeks-low-cost-ai-compares-it-with-own-investment-2025-01-30/>, accessed October 7, 2025)
 26. "Independence Day 2025 Speech: full text of PM Modi speech on Independence Day," *Indian Express*, August 15, 2025 (<https://indianexpress.com/article/india/pm-modi-independence-day-2025-speech-full-text-10191069/>, accessed October 23, 2025)
 27. "PM Modi's speech on 78th Independence Day: full text," *The Times of India*, August 15, 2024 (<https://timesofindia.indiatimes.com/india/pm-modis-speech-on-78th-independence-day-full-text/articleshow/112544356.cms>, accessed October 23, 2025)
 28. "Since 2014, theme of self-reliance has been a leitmotif of Modi's I-Day speeches," *The Times of India*, August 23, 2025 (<https://timesofindia.indiatimes.com/india/since-2014-theme-of-self-reliance-has-been-a-leitmotif-of-modis-i-day-speeches/articleshow/123463122.cms>, accessed October 8, 2025)
 29. "India should not export data to import intelligence, PM Modi told me: Nvidia CEO Jensen Huang," *Firstpost*, October 24, 2024 (<https://www.firstpost.com/india/india-should-not-export-flour-to-import-bread-pm-modi-to-nvidia-ceo-jensen-huang-13828655.html>, accessed October 8, 2025)
 30. For example, the FY2026 budget proposal (announced February 1, 2026) included a measure to grant tax exemptions until 2047 to foreign companies that provide cloud services globally using data centers located in India.
 31. Ministry of Finance [2026] p.559
 32. The description of the "15th Five-Year Plan (2026–2030)," the draft of which was adopted by the Communist Party in October 2025, included the words "substantial improvements in scientific and technological self-reliance and strength." (The State Council, The People's Republic of China, "Xi urges seizing window of opportunity as China charts its new five-year plan," October 29, 2025, https://english.www.gov.cn/news/202510/29/content_WS6901585ac6d00ca5f9a07245.html, accessed December 11, 2025)
 33. Listed in the Eighth Schedule of the Constitution of India.
 34. In India, the national census is conducted every 10 years, but the 2021 census was canceled due to the COVID-19 pandemic, so the 2011 census is the latest. The next census is scheduled for 2027.
 35. Office of the Registrar General, Government of India [2018] "Census of India 2011, Paper 1 of 2018, Language"
 36. In India's secondary education, three languages are compulsory subjects: the state's local language, Hindi, and English.
 37. A method in which additional data is used to retrain a pre-trained AI model in order to improve accuracy for a specific task.
 38. In addition, it is common for people in India to mix multiple languages in conversation, such as beginning a conversation in English, switching to Hindi midway, but then ending in English. This also raises the difficulty level of AI translation.
 39. The official name is the AI & Robotics Technology Park. It is a nonprofit organization established by the Indian Institute of Science with contributions from the central government (Ministry of Science and Technology) and the Government of Karnataka.
 40. In each region, participants are shown various images and asked to describe them in their own local language, and they are also asked to engage in natural conversation. Their speech is recorded and collected as data. According to the Vaani website, data has been collected from 156,000 people in 165 regions across 31 states, for a total of 2,000 hours of conversation in 109 languages. (<https://vaani.iisc.ac.in/>, accessed December 26, 2025)
 41. A platform that provides models, datasets, applications, and other resources for AI research and development. It is operated by the U.S. company Hugging Face.
 42. "Google DeepMind's Project Morni to digitise, preserve 125 Indian Languages," *BusinessWorld*, August 30, 2024 (<https://www.businessworld.in/article/google-deepminds-project-morni-to-digitise-preserve-125-indian-languages-531232>, accessed December 26, 2025)
 43. Refers to various resources required for computer processing, such as processing power and capacity.
 44. Abbreviation of Centre for Development of Advanced

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- Computing. It is a research institution under India's Ministry of Electronics and Information Technology (MeitY), with 11 locations nationwide.
45. Cloud infrastructure refers to a collection of resources (hardware and software) that enable the provision of cloud computing services. Cloud computing services are systems that provide computing resources as a service via the internet.
 46. AIRAWAT ranked 75th in the global supercomputer performance ranking (61st edition) published in June of that year. (TOP500.org website, <https://top500.org/lists/top500/>, accessed October 13, 2025)
 47. "Charting India's AI Future: Strategic Recommendations for India's New Government," *The Secretariat*, June 20, 2024 (<https://theseecretariat.in/article/charting-india-s-ai-future-strategic-recommendations-for-india-s-new-government>, accessed October 13, 2025)
 48. Specifically, cloud computing service providers and data center operators that already possess GPUs participate in the bidding, and the winning companies provide GPUs to designated research institutions and startups through their cloud or data centers. The government partially subsidizes the usage fees.
 49. The government purchased GPUs from companies selected through bidding, such as Yotta Data Services, Jio Platforms, and Tata Communications.
 50. "India's own GPU could arrive in 3-5 years, 18,000 AI servers to go live soon says Ashwini Vaishnav," *The Times of India*, February 6, 2025 (<https://timesofindia.indiatimes.com/technology/tech-news/indias-own-gpu-could-arrive-in-3-5-years-18000-ai-servers-to-go-livesoon-says-ashwini-vaishnav/articleshow/117958923.cms>, accessed November 20, 2025)
 51. "Kosh" means "treasure of knowledge" in Sanskrit, an ancient Indian language.
 52. For example, "Adi Vaani," tribal-language AI translation platform operated by the Ministry of Tribal Affairs, was developed by a consortium led by IIT Delhi in 2024.
 53. Developed under the National Language Translation Mission (NLTM). NLTM is an initiative under the jurisdiction of MeitY. It aims to ensure that policy-related information provided on the internet can be accessed in India's major local languages.
 54. AI4Bharat, discussed later, is deeply involved in this program. AI4Bharat is a research lab at IIT Madras, and is building open-source datasets for India's various local languages.
 55. As noted earlier, the program collaborates with the Vaani project and also collects data through cooperation with central government bodies, research institutions, and private-sector companies.
 56. The assignment of job tasks to an unspecified large number of people.
 57. Services such as "Bhashini Anuvaad," a web-based text translation service similar to Google Translate, are provided. Under the hood, direct translation between two languages is performed, but when data for translating between the two languages is insufficient, so-called pivot translation, whereby a third language with more abundant data is used as an intermediary, is employed. In other words, direct translation means translating from Language A to Language B, whereas pivot translation means first translating from Language A to Language C, and then translating the Language C output into Language B. (Bhashini LinkedIn, https://www.linkedin.com/posts/digiital-india-bhashini-division_techbehindbhashini-techbehindbhashini-activity-7339888084718665728-jVjr/, accessed December 15, 2025)
 58. An API (application programming interface) is "a specification that defines procedures and data formats for calling and using the functions or managed data of one software program from another external program." (e- Words IT Terminology Dictionary, <https://e-words.jp/w/API.html>, accessed November 14, 2025)
 59. A financial support scheme for small farmers. The official name is Pradhan Mantri Kisan Samman Nidhi (Prime Minister's Farmer's Tribute Fund).
 60. "PM Kisan 21st instalment date: When will beneficiaries receive the next instalment?," *Economic Times*, November 17, 2025 (<https://economictimes.indiatimes.com/wealth/save/pm-kisan-21st-instalment-date-when-will-beneficiaries-receive-the-next-instalment/when-will-eligible-farmers-receive-the21st-instalment-of-the-pm-kisan-scheme/slideshow/125384435.cms>, accessed November 18, 2025)
 61. NASSCOM (National Association of Software and Services Companies) is an industry association whose members include major IT-related companies in India.
 62. Notable examples include IndicBERT developed by AI4Bharat (IIT Madras research lab), the Sarvam series developed by Sarvam AI (startup), the Krutrim series developed by Krutrim (startup), the BharatGPT series developed by CoRover.ai (startup), Param-1 developed

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- by BharatGen (initiative), and the Hanooman AI series developed by 3AI Holding Limited (Abu Dhabi-based AI investment firm) and Seetha Mahalaxmi Healthcare (startup).
63. The ability of AI to recognize patterns from limited information or data and draw conclusions about unknown matters.
 64. The four development initiatives were those by Sarvam AI, Soket AI Labs, Gnani.ai, and Gan.ai. The announcement dates were April 26, 2025 for Sarvam AI, and May 30, 2025 for the other three.
 65. The eight development initiatives were those by BharatGen, Fractal, Tech Mahindra, Avataar.ai, ZenteiQ.ai, Genloop, IntelliHealth, and Shodh AI. The announcement date was September 18, 2025.
 66. The founders of Gan.ai and Genloop both studied at Stanford University in the U.S. (master's programs), remained in the U.S. after graduation, worked at Facebook and Apple, respectively, and then founded the companies in the U.S. Meanwhile, Fractal Analytics initially had its headquarters in Mumbai, but shifted to a dual-headquarters structure with the addition in 2005 of a New York headquarters to strengthen its global operations.
 67. This model received only 334 downloads in the first two days after release, and this sparked debate within India. Opinions were divided between criticism that developing such a mediocre model is pointless when high-performance models already exist overseas, and support arguing that it is unrealistic to expect high-performance models from the start and that future evolution should be watched.
 68. Abbreviation of Indian Institute of Technology. IITs are national universities specializing in engineering and science/technology. They were established by the Indian government, and there are 23 of them across India.
 69. "India's Sovereign AI BharatGen Secures ₹988.6 Crore under IndiaAI Mission," BharatGen, September 18, 2025 (<https://bharatgen.com/bharatgen-secures-988cr-via-india-ai-mission/>, accessed October 15, 2025)
 70. For information about India's digital public infrastructure, see Iwasaki [2024a].
 71. Abbreviation of Unique Identification Authority of India.
 72. "India plans to adopt a digital public infrastructure approach to AI: Minister Ashwini Vaishnaw said during Global IndiaAI Summit," *Medianama*, July 4, 2024 (<https://www.medianama.com/2024/07/223-india-digital-public-infrastructure-ai-ashwini-vaishnaw-summit/>, accessed October 23, 2025)
 73. Common communication rules and procedures that allow computers to interact smoothly with one another.
 74. United Nations Development Program, "Accelerating the SDGs through Digital Public Infrastructure," 2023
 75. Specifically, Aadhaar authentication for personal identification and Aadhaar eKYC for personal information verification.
 76. Specifically, AI is used in "presentation attack detection," a technology for detecting spoofing attacks in facial recognition systems. (Ministry of Electronics & Information Technology, "UIDAI seeks real-time or near real-time attack detection solutions to defeat deepfakes, mask attacks, and spoofing in Aadhaar Face Authentication across demographics, devices, and environments; applications open till 15th November 2025" <press release>, October 16, 2025)
 77. Abbreviation of Virtually Integrated System to Access Agricultural Resources.
 78. Use cases include providing real-time advice in local languages based on regional climate conditions and market environments. (Rohit Sakhwalkar, "VISTAAR: Ushering in a digital revolution in Indian agriculture," LinkedIn, January 6, 2025, <https://www.linkedin.com/pulse/vistaar-ushering-digital-revolution-indian-rohit-sakhwalkar-w6swf/>, accessed December 29, 2025)
 79. For details, see Iwasaki [2024b].
 80. National Payments Corporation of India website (<https://www.npci.org.in/product/upi/product-statistics>, accessed January 13, 2026)
 81. iSPIRT is an abbreviation of Indian Software Product Industry Roundtable. Many individuals who were involved in developing Aadhaar at UIDAI participate in iSPIRT, including Nandan Nilekani, the first chairperson of UIDAI, who serves as a mentor.
 82. A data clean room is an environment that enables integrated analysis of anonymized and aggregated data held by multiple organizations. More specifically, each company uploads its data to the clean room's data platform, where the data is encrypted and integrated and analysis is then conducted based on predefined rules. The output consists of aggregated values from which it is impossible to identify individuals. Clean rooms provided by platforms such as Amazon and Google allow integration with data collected on their platforms. Because they enable cross-company data use while protecting privacy, they have been used in such fields as marketing.

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83. To explain the mechanism simply, when a user who wants to train an AI model requests data sharing from a data holder through an intermediary organization, the data is sent to the confidential clean room, where the user's AI model trains on anonymized data. (iSPIRT website, <https://pn.ispirt.in/confidential-clean-rooms-in-depa/>, accessed January 6, 2026)
 84. For example, to enable AI to identify dogs, quality must be ensured in terms of accuracy (images of dogs rather than cats), completeness (images of dogs from various angles), and consistency (the same dog is labeled as a dog across different images).
 85. GitHub [2025]
 86. Ministry of Education Department of Higher Education, Government of India, "All India Survey on Higher Education 2021-22," 2024
 87. Although the Indian government has recently been working to improve levels of research at universities, clear results have not yet been achieved. No Indian university appears among the top 200 institutions in the Times Higher Education World University Rankings 2026.
 88. Maslej, Nestor et al. [2025]. The U.S. ranks first with 173 articles, and China second with 101.
 89. World Bank database. The figure for India is for 2020, and those for the others are for 2022.
 90. Although the Defence Research and Development Organisation (DRDO), under India's Ministry of Defence, is known for its high levels of research standards, it has been pointed out that its achievements rarely spill over into commercial use (Shaikh [2025]).
 91. Press Information Bureau, Government of India, "India's Leap in Research and Innovation," November 4, 2025
 92. India's Mars orbiter Mangalyaan (launched in 2013) had a budget of \$74 million, and the lunar lander Chandrayaan-3 (launched in 2023) had a budget of \$75 million, both far below the \$165 million production cost of the U.S. science-fiction film *Interstellar* (released in 2014). ("India's Chandrayaan-3 successfully lands on lunar south pole," *Interesting Engineering*, August 23, 2023, <https://interestingengineering.com/innovation/indias-chandrayaan-3-successfully-lands-lunar-south-pole>, accessed December 4, 2025)

References

(Japanese)

1. Iwasaki, Kaori [2024a] “Digital public infrastructure in India: India Stack and hints for DX by Japanese local governments,” Japan Research Institute, *Viewpoint*, No.2023-020, January
2. ——— [2024b] “Overseas deployment of digital public infrastructure by India,” Japan Research Institute, *RIM*, Vol. 24, No. 93, May
3. Kumagai, Shotaro [2025] “Current status of AI (artificial intelligence) use in India,” Japan Research Institute, *Research Focus*, No. 2025-029, August 4
4. Center for Research and Development Strategy, Japan Science and Technology Agency (JST) [2025] *New Trends in AI Research 2025*, March
5. Watanabe, Dai [2024] “India’s little-known AI development potential,” Nomura Research Institute, *NRI Management Review*, No. 8, November

(English)

6. Bommasani, Rishi et al. [2021] “On the Opportunities and Risks of Foundation Models” Stanford Center for Research on Foundation Models, Institute for Human-Centered AI, Stanford University
7. Boston Consulting Group [2025] *BCG AI at Work: Momentum Builds, but Gaps Remain*, June
8. Emerging Technology Observatory, ETO Research Almanac: Artificial Intelligence (<https://almanac.eto.tech/topics/ai/>, accessed February 6, 2026)
9. GitHub [2025] “Octoberse: A new developer joins GitHub every second as AI leads TypeScript to #1”, October 28, 2025 (<https://github.blog/news-insights/octoverse/octoverse-a-new-developer-joins-github-every-second-as-ai-leads-typescript-to-1/>, accessed December 29, 2025)
10. Harmon, Sez et al. [2024] “Decoding India’s AI Governance Strategy and its Implications for the U.S.-India Bilateral Relationship”, Takshashila Institution, *Indian Public Policy Review*, 2024 5 (4):51-82
11. International Monetary Fund [2024] *AI Preparedness Index 2023*, December
12. Kumar, Amit [2021] “National AI Policy/Strategy of India and China: A Comparative Analysis”, Research and Information System for Developing Countries, *RIS Discussion Paper Series*, #265
13. Malik, Payal et al. [2025] *AI Markets and Competition in India*, Centre for Internet and Digital Economy, January
14. Maslej, Nestor et al. [2025] *The AI Index 2025 Annual Report*, AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, April
15. Microsoft AI Economy Institute [2025], *AI Diffusion Report: Where AI is most used, developed, and built*, November
16. Ministry of Finance, Government of India [2026] “Economic Survey 2025-2026”, January 29
17. Nagar, Sarosh and David Eaves [2024] “Interactions between Artificial Intelligence and Digital Public Infrastructure: Concepts, Benefits, and Challenges”, Cornell University, December (<https://arxiv.org/abs/2412.05761>, accessed February 6, 2026)
18. NASSCOM, Hitachi Digital Services [2025] *India Generative AI Startup Landscape 2025: Mapping the Momentum*, August
19. Neufeld, Jeremy, Lindsay Milliken [2025] “Most of America’s Top AI Companies were Founded by Immigrants”, Institute for Progress, April 16
20. NITI Aayog [2018] *National Strategy for Artificial Intelligence #AIFORALL*, June
21. ——— [2025a] *AI for Viksit Bharat: The Opportunity for Accelerated Economic Growth*, September
22. ——— [2025b] *AI for Inclusive Societal Development*, October
23. Office of the Registrar General, India [2018] *Census of India 2011, Paper 1 of 2018, Language*
24. Oxford Insights [2025] *Government AI Readiness Index*, December
25. Panday, Jyoti and Mila Samdub [2024] “Promises and Pitfalls of India’s AI Industrial Policy”, AI Now Institute, *AI Nationalism(s): Global Industrial Policy Approaches to AI*, March
26. Patil, Sameer and Sauradeep Bag [2025] “The AI Race: Positioning India and China in a Multipolar Tech World”, Centre on Asia and Globalisation, *China-India Brief*, Issue 254, April
27. Sahni, Neha [2025] “India’s Tech-tonic Shift: From DPI to AI”, HSBC, *CIO Academy*, April
28. Shaikh, Shadma [2025] “Inside India’s Scramble for AI Independence”, Massachusetts Institute of Technology, *MIT Technology Review*, July 4
29. Stanford University Institute for Human-Centered Artificial Intelligence [2025] *Global AI Vibrancy Tool 2025 Release Notes*, November

-
30. Tortoise Media [2024] “The Global Artificial Intelligence Index 2024”, September (<https://www.tortoisemedia.com/2024/09/18/the-global-artificial-intelligence-index-2024>, accessed February 6, 2026)

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