

SCOPING REPORT

Federalism, Artificial Intelligence, and Development

AI governance and development in four federal countries



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*Federalism,
Artificial
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Development*

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Executive Summary

This scoping report examines the relationship between artificial intelligence (AI), development, and federalism in Ethiopia, Brazil, India, and Nepal. It explores how multilevel governance structures influence AI adoption and implementation and the extent to which institutional technical capacities shape development outcomes.

The report highlights how AI offers opportunities to address development challenges in federal countries, but its effective use depends on strong institutions, clear regulations, reliable data, digital infrastructure, skilled personnel, and collaboration with private and academic actors. These enabling conditions are shaped by coordination across multiple levels of governance.

Across the four countries, AI adoption is closely linked to broader digital transformation and state capacity. India and Brazil, with their long-established federal systems, are more advanced in AI experimentation at the national and subnational levels. In Brazil, the use of AI extends across sectors of public finance, accountability and auditing, and legislative and urban governance, with advanced use concentrated at the federal level. AI has been used in monitoring, compliance, anti-corruption, policymaking, administrative efficiency, data-driven governance, fiscal oversights, workflow optimization, automation, and customer service. Similarly, India's AI approach is service-driven, focusing on agriculture, healthcare, and education, and it allows states notable autonomy for innovation. In contrast, Nepal and Ethiopia follow a pilot-driven model. In both of these countries, AI is at an early stage, mainly advancing through pilot projects in development. In Ethiopia, the central government leads these initiatives, and the private sector is less active. In contrast, the private sector and non-governmental organizations are the drivers in Nepal. Both Nepal and Ethiopia face structural challenges that impede the application of AI in development contexts

The main challenges in all the countries analyzed in this study include gaps in data governance, ethical issues, and scalability concerns. Brazil and India face constraints in integrating AI with public sector services despite stronger ecosystems, while Nepal and Ethiopia have deeper capacity and infrastructure deficits. However, all four countries have a large, trainable youth population, creating opportunities to expand data availability, improve data quality, and invest in

context-specific “Small AI” solutions for development, particularly in agriculture, healthcare, and public service delivery.

Two patterns of AI adoption across the four federations

— FIGURE 01

Brazil and India

More advanced in AI experimentation at the national and subnational levels

BRAZIL

Use extends across public finance, accountability and auditing, and legislative and urban governance, with advanced use concentrated at the federal level

INDIA

Service-driven approach focused on agriculture, healthcare, and education, with notable state autonomy for innovation

Nepal and Ethiopia

Pilot-driven model: AI is at an early stage, advancing mainly through pilot projects

ETHIOPIA

The central government leads initiatives; the private sector is less active

NEPAL

The private sector and non-governmental organizations are the drivers

The report presents several recommendations. Future research and policy should focus on strengthening subnational capacities for equitable AI adoption across all four countries by addressing coordination and technological challenges within and across subnational governments. In Nepal and Ethiopia, the role of the private sector and development actors should be identified, and opportunities should be clarified. In addition, knowledge exchange between higher- and lower-capacity states should be promoted. Developing practical toolkits and training for local officials, along with supporting multilevel coordination platforms, can help ensure that AI strategies are adapted to local needs and move beyond isolated pilot projects.

Federalism, Artificial Intelligence, and Development Scoping Report

Artificial intelligence (AI) plays a crucial role in policy, governance, and development interventions across the world. While AI presents substantial potential to improve development outcomes, how AI is used depends on institutional capacities, governance arrangements, and broader political and economic contexts. In federal countries, these dynamics are even more complex, as a variation in subnational capacity and distribution of authority and responsibilities influence how AI is adopted and implemented across the region.

Despite a growing interest in using AI to influence development outcomes, there is limited comparative research examining how the federal system shapes AI-driven development interventions. This scoping report seeks to address this gap by exploring the relationship between AI, federalism, and development across India, Nepal, Brazil, and Ethiopia.

This study adopts a qualitative approach, and the analysis draws on a combination of desk research and stakeholder interviews¹. The desk review examines policy documents, academic literature, and institutional reports to map AI initiatives and governance frameworks across the selected countries. This is complemented by semi-structured virtual interviews with 19 expert stakeholders from the government, academic, and private sectors across Brazil, India, Nepal, and Ethiopia to provide concrete insights.

This study At a glance		SCOPE & METHOD
FEDERATIONS STUDIED 4 federal countries Brazil India Nepal Ethiopia	EXPERT INTERVIEWS 19 stakeholders  Government, academic, and private sectors	RESEARCH APPROACH Qualitative ■ Desk research ■ Semi-structured virtual interviews

¹ Interviewees in India were identified with the support of the Secretariat of the India Society of Artificial Intelligence and Law, in Brazil and Ethiopia through contacts at the Forum, and in Nepal through independent outreach. The names of the interviewees are not disclosed, as permission to do so was not obtained.

01

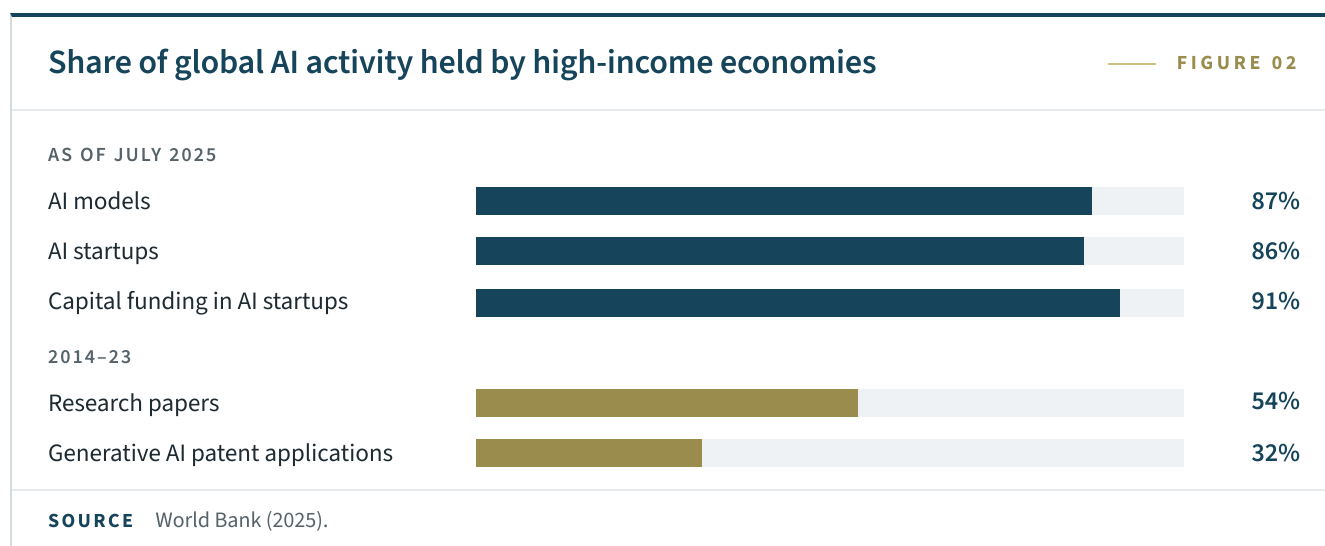
AI, Federalism, and Development: An Analytical Approach

KEY CONCEPTS

Artificial intelligence (AI) refers to a range of technologies that enable machines and computers to perform tasks that normally require human intelligence. It uses a collection of approaches, and one of the most widely used approaches is machine learning (ML), which uses algorithms to learn patterns from large data sets to make predictions. Deep learning (DL) is a specialized branch of ML that uses artificial neural networks to mimic the human brain and process unstructured data. Generative AI (Gen AI) can generate content by learning available data and create human-like content, such as music, text, and images. Large language model (LLM) is a Gen AI model that can process and summarize language instantly (Aarab et al., 2025; Russell & Norvig, 2022). As a result of these capabilities, AI is being deployed by governments for several functions, including automating routine tasks, analyzing large datasets, optimizing service delivery, and supporting evidence-based policymaking (Aarab et al., 2025; Mehr, 2017; OECD, 2025a).

AI is being particularly integrated into public sector services by governments because of its potential to support sustainable development across multiple sectors, including health, agriculture, urban management, and environmental monitoring (OECD, 2025a). Adopting AI in government requires several core capabilities for effective AI integration. This includes leadership and regulatory systems, digital and computational infrastructure, access to high quality data and a data governance system, skilled human resources, and partnerships with external factors such as universities and private firms. Such digital transformation in governance is shaped not only by technological capacity, but also by institutional coordination, regulatory regimes, and multilevel dynamics (Aarab et al., 2025; Allam et al., 2022).

Although AI has the capacity for addressing key development challenges, its innovation and patent ownerships are highly concentrated in technologically advanced economies. Consequently, adoption of AI remains highly uneven across the global economy. High-income countries benefit from already developed stronger digital infrastructure, greater access to computing power and data resources, and a more developed AI research ecosystem, which supports faster experimentation and deployment of AI technologies across public and private sectors. Current evidence underscores the scale of this disproportionate implementation. The World Bank reports that as of July 2025, high-income countries account for 87% of AI models, 86% of AI startups, and 91% of capital funding in AI startups as of July 2025. Also, 54% of research papers and 32% of generative AI patent applications (2014-23) come from high-income economies (World Bank, 2025).



These disparities reflect gaps within foundational AI ecosystem capabilities, which risk further widening inequalities in AI development and adoption (Costa et al., 2025). However, AI applications developed in advanced economies are also creating opportunities for the diffusion of technologies in low-income countries. Low- and middle-income economies still benefit from advantages such as young workforces and partnerships with international actors. Evidence shows that even with limited technical infrastructure, progress is possible through “Small AI” targeted and task specific approaches that require less computing power to improve public services and development outcomes (Chaar et al., 2025; World Bank, 2025).

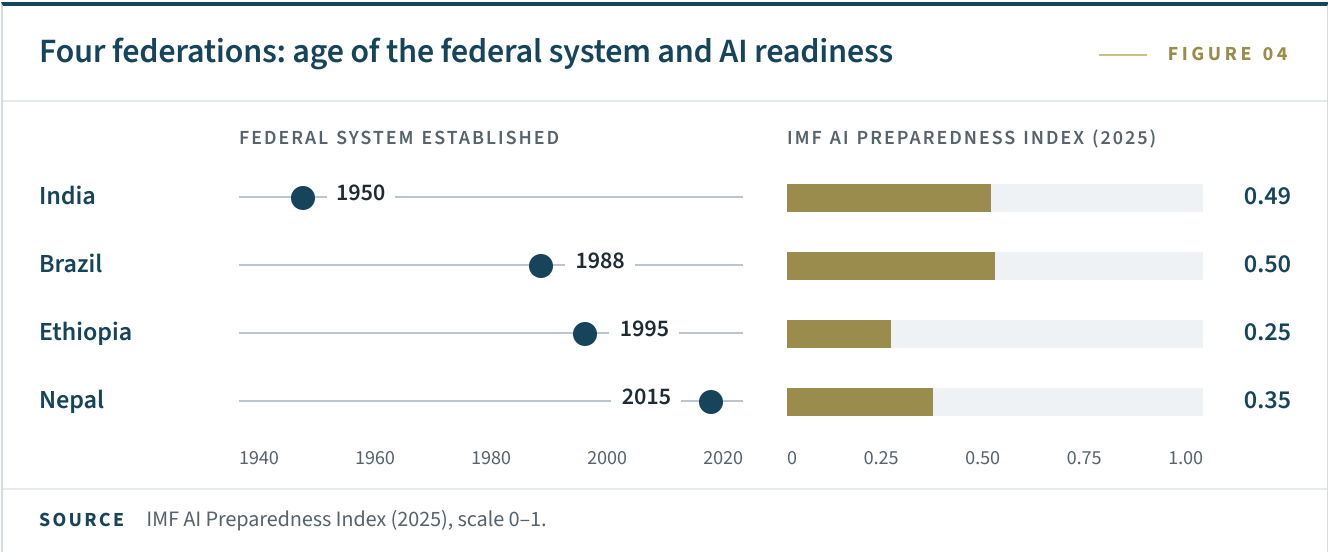
Understanding how these applications translate into development outcomes requires clearer analytical viewpoints. Existing literature does this by classifying AI initiatives along sectoral and functional dimensions. Sectoral classification links AI to development domains such as health care, agriculture, education, transport, and public administration (OECD, 2025a; World Bank, 2025). On the other hand, functional typologies focus on what AI does within public administration. For

example, Hoekstra et al., (2021), identify eight functional types of AI use in government, including knowledge management, predictive analytics, process optimization, inspection and enforcement, policy analysis, maintenance, crime investigation, and tailored services (Hoekstra et al., 2021). Similarly, Yigitcanlar et al. (2024) highlight functions such as decision support, automation, prediction, and service delivery and also map AI in development sector-based applications, including urban planning, public safety, energy management, and data management. Together, these insights provide a structured framework for analyzing the purpose and application of AI in development contexts.

Beyond sectoral and functional typology, the structure of government plays a very important role in how AI is implemented. In federations, the presence of autonomous subnational governments encourages AI experimentation to generate tailored solutions, but multilevel governance can create coordination challenges (Dedyayev, 2026), and adoption depends on institutional and technical capacity (Ishkhanyan, 2025; Yigitcanlar et al., 2024). These dynamics are clearly reflected in practice. For instance, AI implementation in the United States (U.S.) differs greatly across federal, state, and municipal levels, reflecting differences in administrative capacity, regulatory frameworks, and intergovernmental coordination. Federal agencies such as the National Institute of Standards and Technology (NIST) provide guidance, while states and cities experiment with AI tools customized to local needs. For example, New York City is using a predictive policing initiative, and Los Angeles uses an AI-driven traffic management system (Dedyayev, 2026). A similar pattern can be observed in Germany. The subnational governance (the *Länder*) plays an active role in developing digital and AI-related policies to implement region-specific innovative initiatives, while following federal-level strategies (Liebig et al., 2024). These variations provide opportunities for localized innovation but also pose obstacles to achieving consistency, transparency, and accountability at a national level.

Despite insights from developed countries, research on AI governance in developing federal countries remains limited. To address this gap, this study analyses AI governance and development outcomes in four countries—Brazil, India, Nepal, and Ethiopia—from the global south. While India and Brazil have had well-established federal systems since 1950 and 1988, respectively, Ethiopia's ethnic federal system, which was established more recently (1995), also grants substantial autonomy to regional states. Nepal is the newest federation, established in 2015. These countries further vary in terms of digital infrastructure, data ecosystems, human capital, and institutional capacity, which shape AI adoption and reflect differences in digital governance capacity and AI readiness. According to the World Bank's *GovTech Maturity Index* (2025) and *Digital Progress and Trend* (2025), India and Brazil demonstrate relatively stronger connectivity, institutional capacity, and digital infrastructure, whereas Nepal and Ethiopia lag, particularly in connectivity and technical competencies. Similarly, the IMF's *AI Preparedness Index* (2025) ranks Brazil (0.50) and India (0.49) higher than Nepal (0.35) and Ethiopia (0.25), indicating considerable variation in readiness to adopt

AI. Together, these cases provide a diverse set of contexts to examine how federal structures and capacity levels shape AI adoption in development and governance.

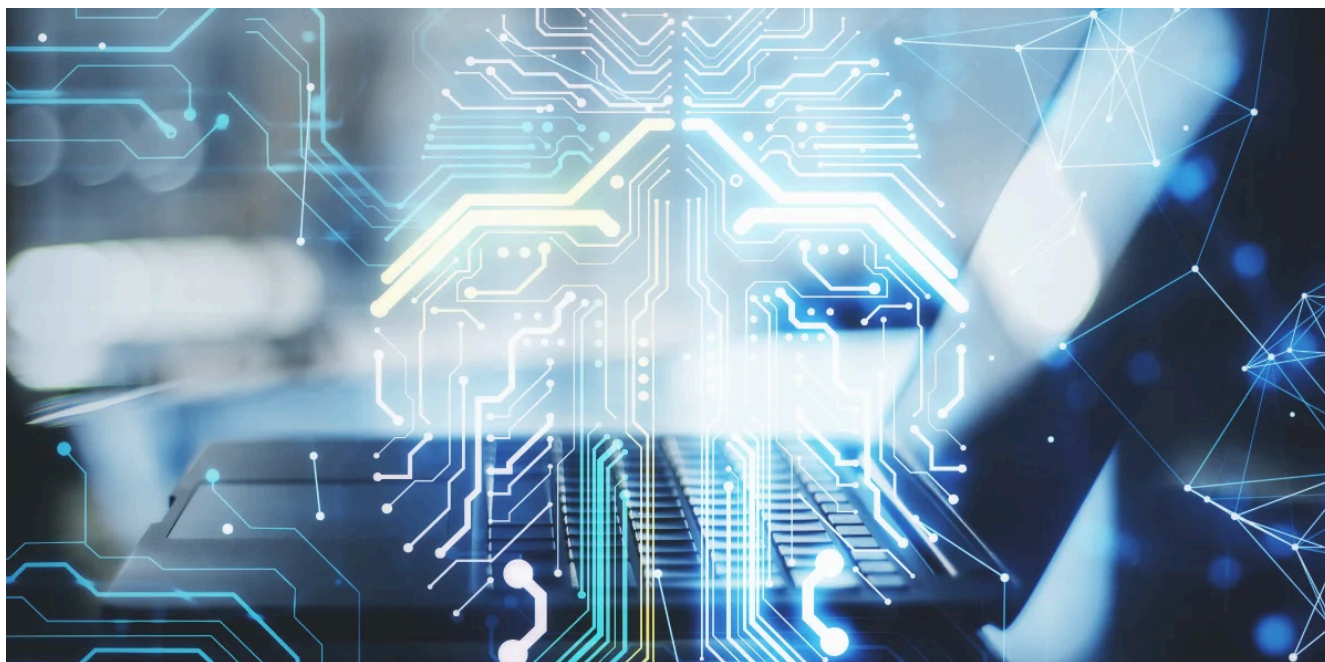


This report maps current uses of AI in development contexts in federal systems; identifies governance opportunities and challenges associated with AI deployment; develops a practical

typology of AI use in development contexts; and proposes a structured future research agenda for the Forum of Federations. Building on the conceptual understanding illustrated above, this report's analysis is guided by the following key questions and sub-questions:

GUIDING RESEARCH QUESTIONS

- Q1** What is the relationship between federal governance structures, AI, and development interventions?
- How does this relationship impact the achievement of development objectives?
- Q2** How is AI being applied and deployed in development contexts with a federal/multilevel governance structure?
- Can examples of innovative practice with lessons for other jurisdictions be identified?
- Q3** What are the opportunities and challenges of AI-facilitated development interventions in federal/multilevel systems?
- Do the claimed advantages of federalism (innovation, experimentation, learning) occur in developing federations (in the context of using / deploying AI)?
- Q4** What should a future Forum research agenda on the relationship between federalism, AI, and development explore?
- What are the key themes and/or countries that warrant further research? Which key research questions should guide a future research agenda?



02

AI Governance and Development Initiatives: Brazil, India, Nepal, and Ethiopia

This section examines AI in a multilevel governance context in Brazil, India, Nepal, and Ethiopia considering the roles of different levels of government, the areas where AI is applied, and policies and institutional mechanisms that shape its use. It is based on country-specific literature, document reviews, and expert interviews.

2.1 Brazil

Country profile		
FEDERAL SYSTEM SINCE	1988	IMF AI PREPAREDNESS (2025) 0.50 FUNCTIONAL TYPOLOGY ■■■■■ Advanced AI GOVERNANCE MODEL Hybrid
LEVELS OF GOVERNMENT	Federal; 26 states and a federal district; 5,568 municipalities	
NATIONAL AI FRAMEWORK	EBIA; PBIA 2024–2028 (approx. R\$23 billion)	

Brazil has emerged as a leading hub for AI in Latin America, with a growing AI ecosystem of startups, research institutions, and public private collaboration. The country has three constitutionally recognized levels of government: the federal government; state government, made up of 26 states and a federal district; and 5,568 municipalities.

At the federal level, the Ministry of Science, Technology and Innovation (MCTI) provides strategic direction through the Brazilian Artificial Intelligence Strategy (EBIA). It encourages public-private partnership for advanced AI research, innovation, and AI adoption in key areas such as health,

agriculture, industry, and public administration. In accordance with OECD principles, the EBIA also guides the government and private sector to advance inclusive, transparent, and accountable AI, while supporting ethical approaches and research (Murad-Schaal & Diniz, 2025; UNESCO, 2025). The EBIA is complemented by the Brazilian Artificial Intelligence Plan (PBIA), which allocates approximately R\$23 billion (2024–2028) across infrastructure, training, public services, business innovation, and governance initiatives (Governo Federal do Brasil, 2024). Moreover, Brazil’s AI strategy and PBIA are directly linked to multiple United Nations (UN) Sustainable Development Goals (SDGs) by applying AI across public services, health, education, public security, energy, environment, and industry (Murad-Schaal & Diniz, 2025; UNESCO, 2025). This shows the government’s ambition to use AI is not just for internal efficiency but to support development goals.

At the federal level, AI tools are increasingly used to analyze large administrative datasets to detect irregularities, monitor expenditures and infrastructure, and support decision-making across taxation, procurement, and social services (OECD, 2025b; UNESCO, 2025). For instance, the Comptroller General of the Union (CGU) developed Alice, an AI tool that analyzes procurement data to spot potential fraud in real time, reducing audit duration from 400 days to just 8 (OECD OPSI, 2024). Similarly, the Federal Court of Accounts (Tribunal de Contas da União [TCU]) uses LabContas, a digital platform, to flag high risk tenders and ChatCTU, a generative AI assistant provides auditors with case summaries, regulatory guidance, and administrative support to improve efficiency while securing data security (OECD, 2025b; Ugale & Hall, 2024). In fiscal governance, Brazil’s National Treasury (Secretaria do Tesouro Nacional [STN]) uses ML to automate the analysis of fiscal data and reporting processes, which reduced the analytical and reporting workload from 1,000 hours to just 8 hours with 97% accuracy (OECD OPSI, 2025; Rocha et al., 2024).

Brazil		Selected federal and municipal AI applications		RESULTS IN NUMBERS	
AUDIT DURATION · ALICE TOOL (CGU)			FISCAL REPORTING WORKLOAD · NATIONAL TREASURY		
Before		400 days	Before		1,000 hrs
With Alice		8 days	With ML		8 hrs
Procurement analysis by the Comptroller General of the Union			97% accuracy National Treasury analysis		
MUNICIPAL DIGITAL SERVICES · RECIFE			PRIVATE-SECTOR ADOPTION (CETIC.BR, 2025)		
700+ services			13% of Brazilian firms use AI technologies		
Integrated into the Conecta Recife digital platform					
SOURCES OECD OPSI (2024; 2025); Rocha et al. (2024); OECD (2025b); Prefeitura do Recife (n.d.); Cetic.br (2025).					

For infrastructure oversight, the National Agency for Land Transportation (Agência Nacional de Transportes Terrestres [ANTT]) applies AI-supported data analytics to improve transport regulation, infrastructure monitoring, and concession oversight (Liborio, 2025; OECD, 2025b). AI is also used in legislative services. The Brazilian Chamber of Deputies has implemented the Ulysses AI Suite, which uses natural language processing to organize and classify large volumes of legislative data, including bills, speeches, research documents, and voting records, thus making it easier for both parliamentarians and citizens to navigate. It increases legislative efficiency, improves information management, and enhances transparency and public access to the parliamentary process (Inter-Parliamentary Union, 2022; Kimaid, 2024).

At the state level, several Brazilian states have embraced AI in governance and service delivery. Although state level regulations exist, they are usually overshadowed by overlapping federal rules. Despite this, the experimentation continues. For instance, Goiás introduced a comprehensive AI law that aims to integrate AI across sectors such as agribusiness, healthcare, education, and industry, while promoting sandboxes for testing technologies, capacity-building, and AI education in schools. Paraná has adopted an AI law that establishes the Guidelines Plan for AI in Public Administration. AI is used for tax analyses, fraud detection, urban planning simulation, and optimizing administrative workflow in government departments (PDIA/PR). The framework focuses on promoting ethical use of AI (IDS, 2025). Meanwhile, states such as Rio Grande do Sul are incorporating AI into digital government strategies to boost public service delivery and address issues such as school absenteeism and public safety (Governo do Estado do Rio Grande do Sul, 2025).

There are also examples at the municipal level, such as Conecta Recife, a digital government initiative developed by the municipality of Recife to modernize access to public services. The platform integrates over 700 municipal services into a single digital interface. The system connects multiple municipal databases and includes AI enabled tools such as a virtual assistant that provides users with information and guidance in real time (OECD, 2025b; Prefeitura do Recife, n.d.). In Piauí, there is a high adoption rate of AI tools across municipal organizations and state systems (Freitas & Lustosa, 2025).

While AI adoption in Brazil's public sector is growing across levels of government, it is more selective and targeted than in the private sector. The private sector remains a key driver of AI and typically collaborates with government agencies. At the same time, adoption of AI within private firms is still below expectations (personal communication, March 24, 2026). According to Cetic.br (2025) only 13% of firms use AI technologies, with the uptake concentrated among large enterprises and information and technology sector (ICT) companies. Small and medium-sized enterprises still lag behind larger ones, not only due to limited resources but also due to regulatory uncertainty and compliance concerns. AI use in private firms focuses mainly on process automation, customer

service (such as chatbots), and data analysis. Most of these companies rely on externally developed, ready-to-use AI solutions rather than building in-house capabilities. Thus, the focus is on operational effectiveness rather than advanced innovation. There is also minimal collaboration with universities, weak public research capacity, and uneven technical capacity throughout the country. As a result, the AI ecosystem remains heavily dependent on foreign companies and shows limited domestic innovation (Cetic.br, 2025).

However, one of the main limitations of AI adoption by the firms is strict but unclear copyright-heavy regulations (personal communication, March 24, 2026). Brazil's AI law aims to make AI safer, fairer, and more respectful of people's rights. For instance, the General Personal Data Protection Law (LGPD, 2018) provides a legal foundation for responsible data use in AI systems by both public and private sectors (Murad-Schaal & Diniz, 2025). However, the law also makes AI development more complex and regulated. Brazil's AI regulation is based on several legal layers. The country's main AI bill (PL 2338/2023) sets strict copyright and transparency rules that limit the use of training data without authorization and payment. This limits large-scale AI deployment by private firms. Similarly, criminal law No. 15, 123/2025 adds a layer on harmful use of AI (such as deepfake fraud or identity misuse), thus increasing legal risk for companies, which can raise cost, slow innovation, and make firms more cautious about deploying AI systems (Paranhos, 2024; Tele time, 2024). Similarly, important sectors where AI can be deployed—such as health, finance, and public services—are subject to additional sector-specific rules. Interviews indicate that strict rules on data collection, storage, and processing can slow experimentation and create a compliance burden, especially for AI focused startups (personal communication, March 19, 2026; personal communication, April 6, 2026).

“ *Strict rules on data collection, storage, and processing can slow experimentation and create a compliance burden, especially for AI focused startups.*

— INTERVIEW FINDINGS, BRAZIL

Nevertheless, Brazil offers vast opportunities to develop AI, supported by its abundance of administrative, commercial, and sector specific data that provides a sound foundation for AI deployment across development. This rich data supports progress towards multiple sustainable goals (Interviews, March, April 2026). In federal systems, such extensive data enables both national level coordination and subnational experimentation, maximizing the development of AI initiatives. The federal framework grants opportunities and enables uneven implementation of AI across Brazil's public operations. Although opportunities exist, there are many challenges; the variation in capacity, resources, and digital infrastructure

across subnational units leads to uneven implementation, resulting in disparities in AI adoption across regions.

Overall, Brazil demonstrates a relatively advanced and dynamic AI ecosystem within a federal system, where private-sector, national, and subnational actors play active roles in shaping AI adoption for development. Federal institutions provide direction, regulatory structures, and large-scale AI applications, particularly in administration, taxation, infrastructure, and governance. State and municipal governments experiment with context-specific AI solutions in areas such as urban management and public safety. Functionally, AI is widely used for analytics, decision support, fraud detection, and workflow optimization throughout health, education, transport, and public finance.

However, despite this progress, AI adoption is still uneven, with stronger uptake among larger enterprises, the federal government, and a few economically sound states and municipalities. Additionally, an unclear regulatory environment, compounded by the absence of a finalized federal AI law, discourages private firms from experimenting with AI. Beyond regulation, other challenges, such as shortages of skilled talent, high costs, and taxes on hardware (GPUs, data centers), further constrain AI growth (Virtual Interview 24 March).

— KEY TAKEAWAY · BRAZIL

Future efforts should center on expanding capacity at subnational levels and promoting stronger integration between governmental and private sectors, ensuring flexibility and clarity on legal frameworks that can impact AI.



2.2 India

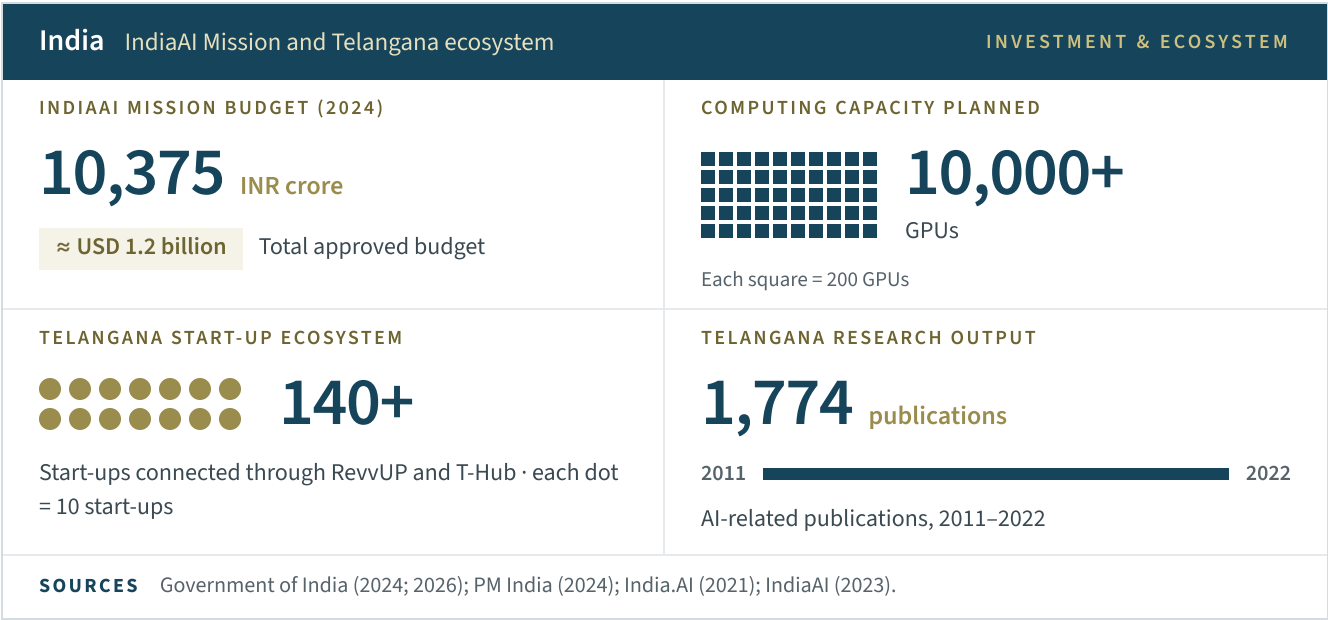
Country profile		
FEDERAL SYSTEM SINCE	1950	IMF AI PREPAREDNESS (2025) 0.49 FUNCTIONAL TYPOLOGY Intermediate AI GOVERNANCE MODEL Hybrid
LEVELS OF GOVERNMENT	Union; 28 states and 8 union territories	
NATIONAL AI FRAMEWORK	IndiaAI Mission (2024); INR 10,375 crore	

India’s Constitution divides powers across the union, state, and concurrent lists, granting substantial autonomy to its 28 states and 8 union territories. This federal framework creates a broad governance landscape in which subnational governments play a key role in policy experimentation and AI implementation.

At the central level, the NITI Aayog provides strategic AI policy guidance, while the Ministry of Electronics and Information Technology (MeitY) oversees digital technology initiatives. The IndiaAI Mission, approved in 2024, is operated by MeitY as the government’s flagship program. With a total budget of INR 10,375 crore (approximately USD 1.2 billion), the mission aims to build a comprehensive ecosystem by developing large-scale computing infrastructure, including capacity of over 10,000 graphics processing units (GPUs), and establishing a dataset platform, AI Kosh, to aggregate high-quality non-personal data, invest in skills development, and establish an AI center of excellence. The mission supports startups and researchers with computing subsidies, promotes the development of indigenous AI models, and promotes sector-specific AI application in areas such as health care and agriculture. It also encourages industry collaboration, drives socially impactful projects to guarantee ethical AI use, and develops large multimodal and domain-specific AI models (Government of India, 2024; Government of India, 2026; PM India, 2024). The IndiaAI mission also promotes safe and trusted AI through self-assessment frameworks and techno-legal mechanisms (UNESCO, 2025). Building on these domestic efforts, India stepped into global AI governance by co-hosting the AI Action Summit in February 2025 in Paris and the India AI Impact Summit in February 2026 in India. These multiyear investments, together with AI diplomacy, reflect a strategic effort by India’s central government to strengthen domestic AI capabilities and India’s influence in global AI policy. At the federal level, some AI use cases are emerging, including projects like AI tools for health insurance claims and national language processing (BHASHINI & Government of India, n.d.), but most use cases remain strategic infrastructure-oriented and foundational.

The Sixth and Seventh Schedules empower state governments to implement sectoral programs in areas like health, agriculture, and education. This provides a legal basis for subnational AI

initiatives; thus, several Indian states have deployed AI policies or innovation programs. Among them, Telangana is considered a model state. Telangana’s flagship programs, such as RevvUP and T-Hub, have promoted a robust ecosystem that connects over 140 startups, with mentorship, funding, infrastructure, research, and market opportunities. The programs produced about 1,774 AI-related publications between 2011 and 2022 (India.AI, 2021; IndiaAI, 2023). Moreover, in Telangana, AI tools such as AGNEXT and Aqua Connect provide advisory on demand prediction, irrigation, and pesticide use. In healthcare, AI startup Niramai (Non-Invasive Risk Assessment Machine Intelligence) uses a thermal-imaging-based breast cancer screening tool powered by AI to help detect early-stage cancers in patients who would otherwise lack access to mammography. In addition, it provides personalized learning platforms, including AI-based summer schools, to support diverse students (Babu, 2025).



Similarly, Tamil Nadu has advanced AI adoption through the Centre of Excellence for Emerging Technologies (CEET), which promotes several AI technologies, including computer vision, time series, and pattern recognition, mainly to focus on service delivery to the citizens, including crop diagnosis tools such as Uzhavan predictor, AI based cataract screening via mobile device, facial recognition for school attendance, and Tamil language virtual assistance for government services (Govt. of Tamil Nadu, 2023). However, AI innovation remains geographically uneven as it is concentrated in a few states and major urban hubs such as Bengaluru, Hyderabad, Delhi, Mumbai, and Chennai, highlighting persistent regional disparities. This has led to uneven outcomes, as digitally advanced states are progressing faster than the less advanced states (personal communication, April 5, 2026). This raises an important federal governance concern, how less resourced and lower capacity constituent units benefit from AI driven development when

innovation, infrastructure, and talent are largely concentrated in more advanced regions. This underscores the importance of federal coordination beyond innovation hubs and into lower capacity regions.

Nevertheless, AI adoption has also begun at the village government bodies (Gram Panchayats) level although at a very slow pace. In August 2025, the SabhaSaar AI tool was launched to summarize Gram Panchayat meetings using natural language processing. By late 2025, tens of thousands of users had used this tool, which improves efficiency, standardization, and transparency in village governance by automating the previously manual and time-consuming task of preparing minutes of meetings. Similarly, Satnavari village near Nagpur became India's first AI-driven "Smart & Intelligent Village," where AI-enabled apps assist farmers with soil health, irrigation, and weather updates, and introduce remote health care access and AI-enhanced educational tools. This project was implemented with state and private sector involvement, showing a localized, real-world AI experimentation model. Similarly, the Indian government is showcasing various vernacular tools through BHASHINI and several startups (IBEF, 2026).

Startups are also developing local solutions; for example, AI farm assistants called Sarlaben use dairy data and provide personalized guidance on cattle health, vaccination schedules, feeding practices, breeding management, and relevant government subsidies (CDO Magazine, 2026). A key insight is that users do not adopt AI as a stand-alone technology; instead, they engage with AI-enabled services embedded within familiar delivery systems such as mobile platforms, government schemes, and local institutional networks. This suggests the development potential of AI India depends less on technological sophistication alone and more on effective integration into existing socio-economic infrastructures, particularly in rural areas (personal communication, April 5, 2026). The examples at the village level illustrate how a localized, integrated approach can overcome structural challenges.

However, deployment of AI in the public sector remains limited, with most applications in health-care, welfare delivery, and agriculture still at pilot stages (personal communication, March 24, 2026). Moreover, the Indian government's cloud-based AI computing platform, AI Rawat, is modest compared to international standards (Queiroz & Direito, 2025).

AI adoption in India is largely driven by the private sector. Private sector actors exhibit higher levels of AI maturity and deployment compared to their public sector counterparts due to flexibility, access to capital, and competitive pressure (Ravi & Nagaraj, 2018). The use of AI is more visible in customer support automation, financial services, and enterprise workflows. Tech startups are leading innovations in areas such as voice AI, vernacular tools, enterprise copilots, and fraud detection systems, while large tech companies integrate AI into existing workflows (personal communication, March 25, 2026). Most startups focus on developing application layer solutions rather than foundational models, by leveraging open-source technologies and existing

infrastructures (Infinite Techai, n.d.). Interviews further suggest that AI adoption is primarily market-driven, shaped by efficiency and gain, rather than by state-led strategies (personal communication, March 31, 2026; personal communication, April 5, 2026). Over reliance on the private sector has led to continuous dependence on global models and foreign cloud infrastructure. Structural constraints such as limited domestic infrastructure, insufficient research depth, and difficulties in retaining talents in India further contribute to the persistent gap (personal communication, March 31, 2026). In a federal system, this creates a layered sovereignty challenge in which authority over data is distributed, yet infrastructural dependence remains externalized.

Moreover, ethical concerns of bias, privacy, and inequality are unevenly institutionalized (Bhalla et al., 2024). Although ethical AI principles and regulatory discussions are advancing, their operationalization into enforceable standards and deployment-level safeguards is not taking place. This highlights the need to bridge the gap between high-level policy intent and practical implementation within India's multilevel governance system. One of the interviewees, highlighted that India's AI landscape is often framed as something that “runs ahead of reality,” as initiatives such as AI missions are largely visible at the level of announcements and policy signaling, with limited execution on the ground. However, public sector adoption of AI faces several structural challenges, including a significant implementation gap between policy intent and execution, bureaucratic inefficiencies, and uneven state capacity. Additionally, data constraints, capacity to have clean data, and infrastructure limitations restrict scalability (personal communication, March 24, 2026; personal communication, April 05, 2026).

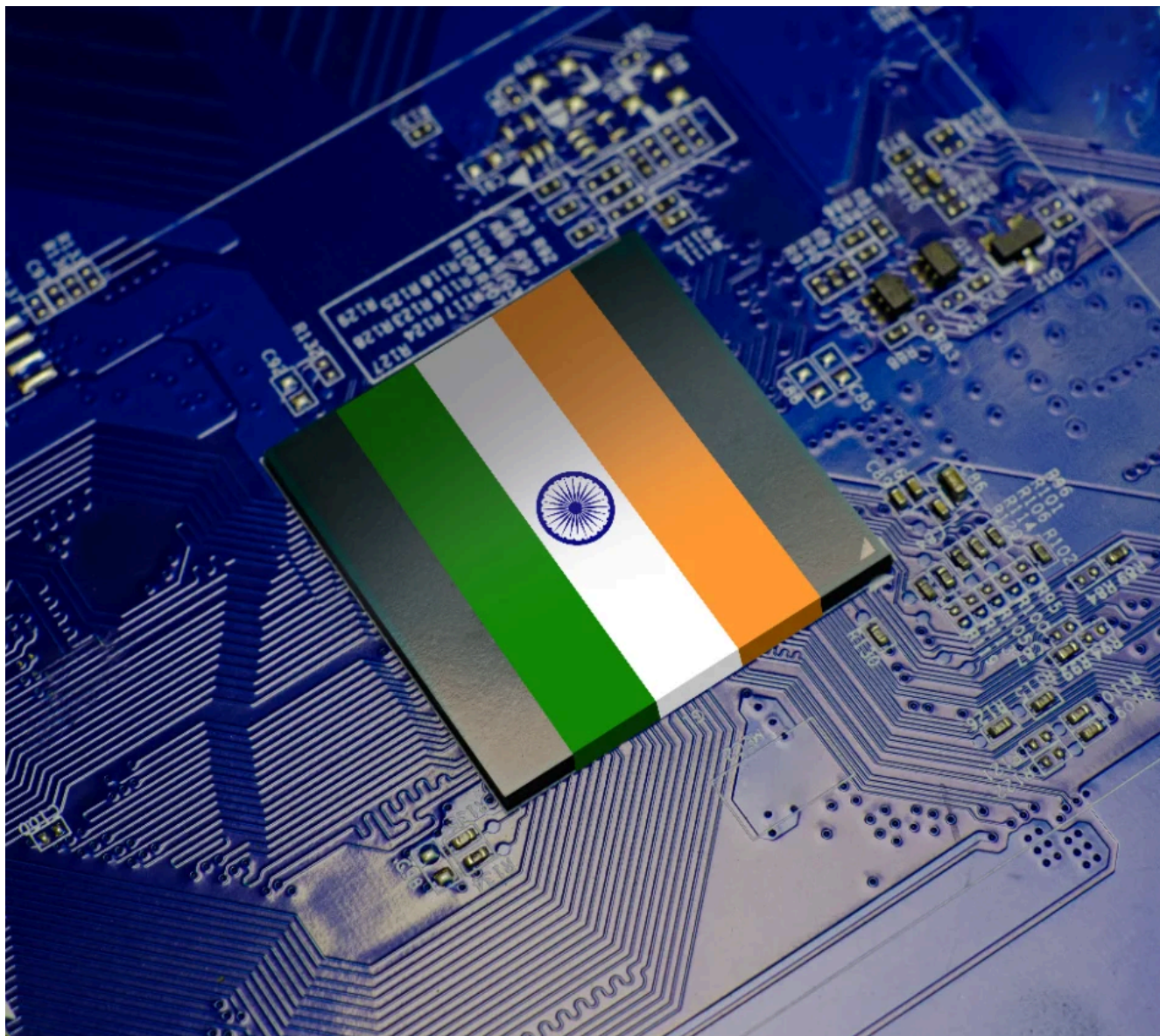
“ *India's AI landscape is often framed as something that “runs ahead of reality.”*

— EXPERT INTERVIEWEE, INDIA

Taken together, public and private practices show that functionally, AI in India spans voice and language tools, predictive analytics, diagnostic applications, workflow automation, and data driven decision support. These functions are applied across healthcare, agriculture, finance, and public governance. Most initiatives are developed by private sector experimentations and leveraged by the state governments through subnational programs. These dynamics underscore how the AI trajectory is shaped in India.

KEY TAKEAWAY · INDIA

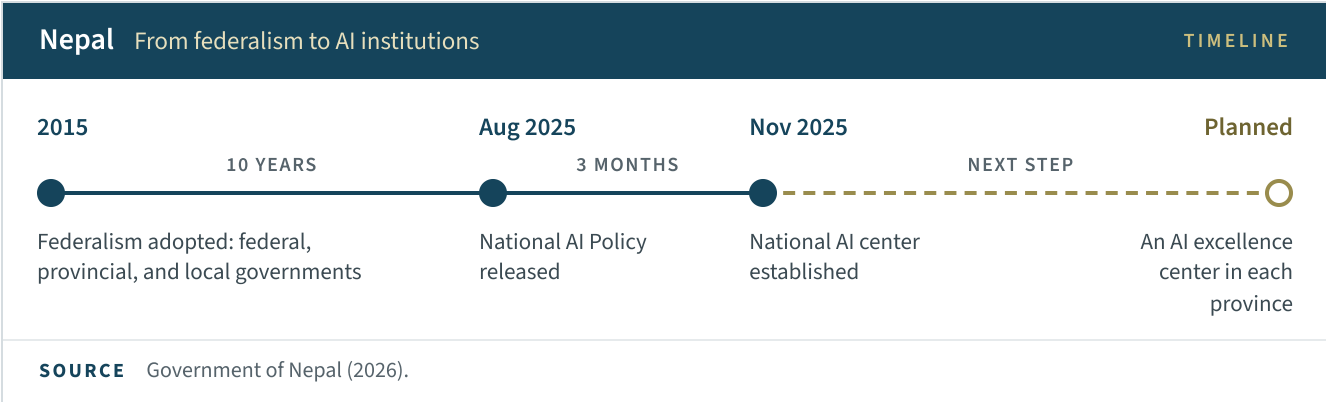
While the central government articulates ambitious policies and strategic direction, AI adoption is uneven. From a federal perspective, India's AI ecosystem reflects a hybrid governance model that combines centralized direction with decentralized implementation, albeit on a very small scale. Overall, the federal government is an enabler rather than a direct provider and facilitates market-driven innovation through policy framework, data access, and delivery channels at the subnational levels.



2.3 Nepal

Country profile		
FEDERAL SYSTEM SINCE	2015	IMF AI PREPAREDNESS (2025) 0.35 FUNCTIONAL TYPOLOGY Basic AI GOVERNANCE MODEL Fragmented
LEVELS OF GOVERNMENT	Federal, provincial, and local	
NATIONAL AI FRAMEWORK	National AI Policy (August 2025)	

Since the adoption of federalism in 2015, governance responsibilities have been distributed across three tiers: federal, provincial, and local governments. The federal government set a strategic direction through the National AI Policy, which came out in August 2025, and coordinates implementation through proposed national AI institutions. The National AI Policy 2025 marked the country’s first comprehensive effort to promote AI innovation. It emphasizes the creation of a national data ecosystem, open data initiatives, and the development of AI systems for sectors such as agriculture, health, education, and disaster management. It also addresses issues related to responsible data use, cybersecurity, and public sector procurement of AI technologies (Government of Nepal, 2026). The policy highlights the need to create core institutions to support the implementation of the AI policy; consequently, in November 2025, a national AI center was established, and the government plans to establish an AI excellence center in each province. However, there is an implementation gap in this policy (personal communication, February 25, 2026).



Nepal’s AI innovation environment is emerging but still fragmented. It is limited to policy initiatives. Nevertheless, in Nepal, hackathons have emerged as an important platform for promoting AI-driven innovation in development sectors, often serving as early entry points for new

ideas. Such initiatives bring together universities, think tanks, businesses, and international organizations to develop solutions across agriculture, disaster management, e-governance, and public service delivery (Nepal Economic Forum, 2025). However, the AI ecosystem is constrained by limited infrastructure, a shortage of skilled talent, weak data systems, and low investments. As a result, AI innovation in Nepal is largely pilot-driven and externally supported, with limited capacities of scaling or sustained institutional adoption. While they generate promising prototypes, such as AI tools for landslide prediction and smart farming, most outputs remain at the pilot or experimental stage, with limited integration into formal government systems (Facet Technology Pvt. Ltd, 2024).

In terms of AI use in development sectors, Nepal's landscape is characterized by small, sector-specific applications, particularly in agriculture, disaster management, environmental monitoring, service information via chatbots, and urban planning (personal communication, March 18, 2026; personal communication, March 22, 2026). Examples include AI use for crop monitoring, yield estimation, soil analysis, weather forecasting, and pest or disease detection. These systems rely on satellite imagery, remote sensing, and ML for monitoring, disease detection, crop yield prediction or pest outbreak prediction, and decision support for irrigation, fertilization, and crop planning (Lamsal et al., 2025). In addition, AI has been used for early warning systems for floods and landslides, and remote sensing technologies for forest and biodiversity monitoring. These initiatives often rely on predictive analytics and data-driven decision support but remain localized and project-based with limited integration into the formal government system (Lamsal, 2025; Lamsal et al., 2025; Mahat et al., 2025; Nepal Economic Forum, 2025). In the health sector, AI applications primarily focus on clinical decision support, diagnostic assistance, patient monitoring, and telemedicine, particularly to extend health care access to rural and underserved areas. While these tools promise to improve diagnosis accuracy, their practical deployment remains limited due to insufficiently trained personnel, and weak integration with the government health systems (Dahal & Sharma, 2023). AI is also transforming Nepal's business sector by enabling firms to become more data-driven, efficient, and customer-focused. In finance, AI supports fraud detection, credit scoring, and risk assessment through analytics and decision support, while in retail and e-commerce, it enables customer segmentation, demand forecasting, and recommendation systems using data management and analytics. Companies are also adopting chatbots and workflow automation for improved service delivery and operational automation (Sthapit & Vaidya, 2025).

In terms of AI use in these functions, AI is mostly used in predictive analytics (e.g., agriculture yield forecasting, disaster risk modeling), decision support systems (environment monitoring, forestry management, urban planning), and data management and analytics (satellite data processing and biodiversity tracking). However, compared to India, and Brazil, Nepal lacks large-scale AI deployment. In addition, all interviews indicated that many AI research projects in Nepal are conducted in isolation from government institutions. Findings

are, therefore, not shared with local authorities. This disconnects research outputs from subnational implementation.

“ *Many AI research projects in Nepal are conducted in isolation from government institutions.*

— INTERVIEW FINDINGS, NEPAL

From the perspective of federal framework, the federal level designs policies and at the subnational level, context specific implementation occurs, in collaboration with non-governmental organizations (NGOs), researchers, or donor programs. Nepal's case highlights several governance opportunities and challenges. On the one hand, federalism creates space for localized experimentation, which allows AI tools to be tailored to specific geographic and socio-economic contexts. On the other hand, the system faces significant constraints, including the government's relatively recent attention to AI policy, limited digital infrastructure, a shortage of skilled human capital, weak data governance frameworks, and risks of exclusion and bias in AI deployment (personal communication, March 24, 2026; personal communication, March 31, 2026). These challenges are compounded by over dependency on external actors, which can limit sustainability.

— KEY TAKEAWAY · NEPAL

Overall, Nepal's AI ecosystem reflects an emerging policy framework combined with uneven institutional readiness and a strong reliance on international collaboration for technological development. Nepal's federal system presents a low-to-moderate AI readiness in which emerging digital ambitions coexist with structural capacity constraints.

2.4 Ethiopia

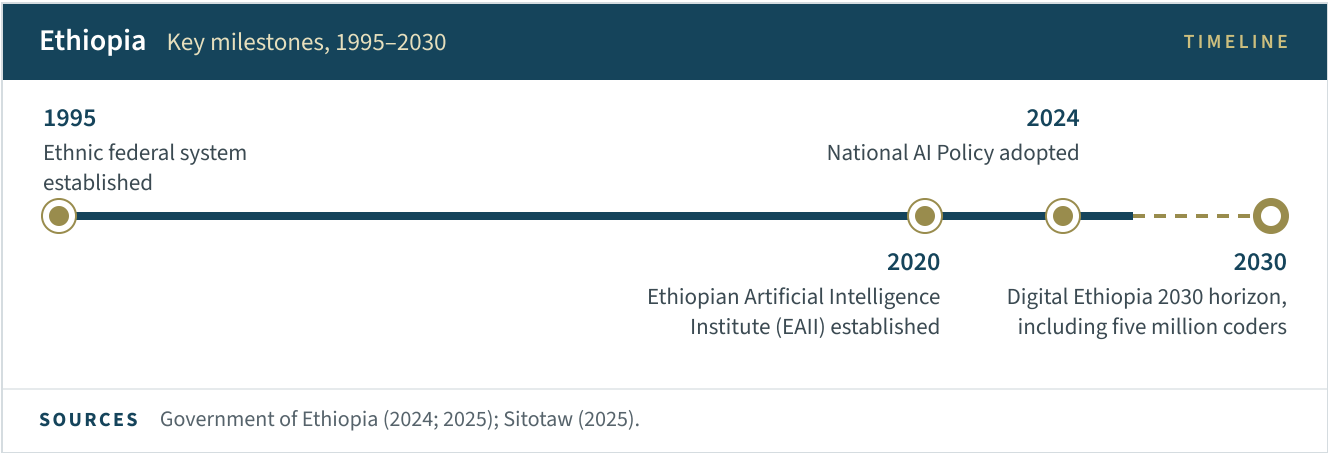
Country profile		
FEDERAL SYSTEM SINCE	1995	IMF AI PREPAREDNESS (2025) 0.25 FUNCTIONAL TYPOLOGY Basic AI GOVERNANCE MODEL Centralized (state-led)
LEVELS OF GOVERNMENT	Federal government and regional states	
NATIONAL AI FRAMEWORK	National AI Policy (2024); Digital Ethiopia 2030	

Ethiopia is a federal state with significant regional autonomy under its ethnic federal system. The World Bank places Ethiopia in the bottom tier of digital readiness and highlights deep structural gaps in connectivity, computing power, data availability, and digital skills (World Bank, 2025). Nevertheless, Ethiopia has been showing a growing interest in AI, closely tied to the leadership of Prime Minister Abiy Ahmed, whose technical background and development vision have shaped the country’s digital trajectory (personal communication, March 24, 2026).

Ethiopia has key policy foundations such as the National AI Policy (2024), which outlines how AI should be governed, regulated, and deployed across sectors. It sets standards for data use, ethical AI, interagency coordination, and regulatory frameworks involving sectoral ministries like health, finance, and telecommunications (Government of Ethiopia, 2024). AI is embedded in the country’s overall digital transformation strategy through Digital Ethiopia 2030, which aims to build AI capacity nationwide. Through a nationwide investment, it aims to strengthen digital infrastructure, expand data-driven public services, and implement large human capital initiatives, such as generating five million coders (Government of Ethiopia, 2025). Moreover, a central body, the Ethiopian Artificial Intelligence Institute (EAI), for research and policy formulation was established in 2020. It serves as the central federal body responsible for coordinating AI policy, research, and implementation in Ethiopia (Sitotaw, 2025).

The interviews indicate that AI adoption in the country is shaped by a top-down federal structure, where a national vision exists but AI’s impact on development is constrained by very limited subnational capacity, coordination, and autonomy (personal communication, March 24, 2026; personal communication, April 3, 2026). AI adoption in Ethiopia is evolving, and it is being used across many development sectors. Unlike Brazil, India, and Nepal, interviewees noted that Ethiopia’s AI ecosystem is largely driven by the public sector (GSMA, 2025; personal communication, March 19, 2026; personal communication, March 24, 2026; personal communication, April 6, 2026). In agriculture and healthcare, the most common functions are advisory systems, predictive and data analytics, and diagnostic tools, where AI supports farmers

with crop recommendations and enables disease detection or outbreak forecasting. In the financial and public sectors, AI is primarily used for data collection and analytics, such as credit scoring and decision support. In education, personalization is emerging through tailored learning in education and targeted services in the financial sector (GSMA, 2025). At the federal level, AI is used for high-level sector planning, particularly health care infrastructure, where optimization models combined with LLMs are used to support decision-making, integrate expert knowledge, and improve equitable resource allocation (Trabelsi et al., 2026). However, regions are still focused on digitalization and basic data integration rather than advanced AI deployment. Although regions have autonomy in principle, in practice they lack the capacity for localized adaptation and implementation (personal communication, April 3, 2026). This indicates a growing interest but limited meaningful integration of AI.



“ Although regions have autonomy in principle, in practice they lack the capacity for localized adaptation and implementation.

— INTERVIEW FINDINGS, ETHIOPIA

Automation of services is developing in public administration, particularly in telecom-based services, including chatbots and digital platforms. Functions such as optimization systems to improve efficiency in areas like resource allocation and infrastructure management remain limited and at an early stage compared to advisory and predictive applications (GSMA, 2025). This functional pattern reflects broader systemic constraints that shape AI adoption in Ethiopia. Jima et al. (2023) offer a system level diagnosis and highlight structural constraints such as limited data infrastructure, shortage of skilled professionals, and weak institutional coordination, all of which determine the pace of AI adoption. Moreover, AI research output in Ethiopia is very limited, with only 35 published articles, which reflect the broader constraints in skills and research capacities

(Kondo & Diwani, 2023). The scarcity of academic literature on AI in Ethiopia indicates both the nascent stage of the ecosystem and structural constraints in research capacities and infrastructure.

Moreover, there is limited integration between academic research and practical implementation, as well as underdeveloped local innovation ecosystems and startup support mechanisms (Jima et al., 2023). As a result, AI use across sectors remains largely confined to basic and supportive functions, indicating that the depth and sophistication of AI adoption are closely tied to capacities and uneven implementation of national digital strategies. Interview evidence also suggests that AI adoption is still at an early stage, with functional applications focused on data management, decision support, and project monitoring, while sectoral applications are emerging in urban planning, agriculture, health, and education. Jima et al. (2023) highlight that if investments are made in data infrastructure, skills development, and institutional capacities, along with a strengthened legal and governance frameworks, Ethiopia can transition from pilot projects to scalable implementation.

Ethiopia's AI landscape is characterized by a state-led, centrally-driven model. Although private sector participation is growing, the government remains the primary driver of AI adoption (personal communication, 24, 27, March 2026; personal communication, 04 April 2026), unlike in Nepal, Brazil, and India, where the private sector is leading. Due to weak private sector participation and persistent challenges in attracting investment, broader deployment of AI remains limited (GSMA, 2025). Nevertheless, telecom liberalization is opening space for the private sector and AI expansion. This transition is expected to improve connectivity, expand mobile internet access, and lower service costs, thus creating more favorable conditions for AI development and deployment (personal communication, April 07, 2026).

Overall, AI use in Ethiopia appears to be progressing through practical use cases, such as education, agriculture, and finance, primarily through pilot projects focused on analytics, decision support, and service delivery. From a federal perspective, policies, strategies, and legal frameworks are largely centralized in Ethiopia, driven by national strategies and institutions like EAII, which provide clear direction for AI adoption but offer limited clarity on the roles of regional and local governments in implementation. Further research is needed to understand the policy focus on multi-level coordination, a supportive data ecosystem, an enabling environment for the private sectors, and suitable pathways to scale AI for a more inclusive and sustained development impact.

KEY TAKEAWAY · ETHIOPIA

The anticipated benefits of federalism for AI adoption—such as innovation, experimentation, and policy learning—are emerging but not fully realized. The long-term use of AI in Ethiopia will depend on addressing foundational constraints, attracting investment, and public-private partnership.



03

Comparative Analysis and Typology of AI Use Cases

This study shows that the relationship between federal governance structures, AI, and developing interventions remains at an early stage in Nepal and Ethiopia, whereas Brazil and India exhibit relatively advanced adoption. Across all four countries, AI policies and institutions are still evolving and largely centralized. Federal institutions give strategic direction, and regional governments implement initiatives and conduct experimentation at scale in India and Brazil, whereas in Ethiopia and Nepal, experimentation is very limited. This study suggests that federalism alone does not ensure effective AI deployment; alignment between levels of government, a supportive legal framework, an active private sector, and technological infrastructure is critical for achieving development outcomes.

In Ethiopia and Nepal, AI adoption reflects a functionally constrained pattern, concentrated in relatively low complex applications. In Ethiopia, AI is primarily used in agriculture (e.g., advisory services for farmers), healthcare (e.g., diagnostic support and outbreak prediction), and public administration (e.g., data analytics and basic automation) and urban planning (prediction). Nepal shows a similar pattern of AI use in the development sector, mostly through pilot projects in agriculture, health, urban planning, and disaster management. Much of the implementation in Nepal is driven by the private sector or NGOs rather than the government-, although subnational governments can implement initiatives if they want to. The federal government plays a central role in AI initiatives in Ethiopia. In both countries, broader structural constraints—including limited digital infrastructure, a shortage of skilled personnel, and fragmented data ecosystems—are limiting AI deployment at a large scale.

In contrast, Brazil and India demonstrate more advanced and diversified AI adoption, supported by stronger institutional capacities, larger data ecosystems, and more active public-private collaborations. However, Brazil and India adopt AI differently at the federal and subnational levels. At the federal level in Brazil, AI is embedded in concrete government functions such as auditing (Alice and LabContas), infrastructure monitoring (ANTT), and legislative support (Ulysses). India, on the other hand, emphasizes ecosystem building through the IndiaAI Mission, with initiatives in compute infrastructure, datasets, innovation hubs, skills development, and startup support. At the subnational level, Brazilian states like Goiás and Paraná have been using AI across administrative sectors, including public administration, urban planning, and citizen services, as well as chatbots. On the other hand, in India, states primarily run pilot projects in health, agriculture, education, and governance, often with public-private partnerships; however, there is a lack of large-scale implementation. Although these two countries are positioned better than Nepal and Ethiopia, they still face significant challenges. Despite government, they lack sufficient infrastructure and face issues related to data quality and ethical concerns. Moreover, in Brazil, regulatory uncertainty further adds complexities to AI adoption, particularly by the private sector.

These constraints highlight that AI adoption is shaped not only by ambition but also by each country's underlying capacity and governance conditions. In this context, AI adoption in Brazil, India, Nepal, and Ethiopia can be understood through three interrelated typologies: functional (what AI does), sectoral (where it is applied), and governance (who drives its adoption). Table 1 presents a comparative typology of AI adoption across functional, sectoral, and governance dimensions. Functionally, AI ranges from advisory and predictive tools to decision support, automation, and monitoring systems. In Brazil, AI is used to support core public sector functions, to help with decision-making, and to deliver some services at scale. The use of AI in the public sector in Brazil is relatively more advanced than in the other three countries under study. Therefore, Table 1 categorizes Brazil as an advanced country in adopting AI functions. Among these four countries, India is at an intermediate level of reliance, with AI used as a predictive tool and in the early stages of scaling. Accordingly, its functional capacity is categorized as intermediate in Table 1. On the other hand, Nepal and Ethiopia are concentrated in lower complexity applications. The use of AI in public functions in Nepal and Ethiopia is at a basic level, which means they are limited to pilot projects and some advisory and analytical tools.

From a governance perspective, federal institutions play a central role in setting strategy, but subnational governments, private sector actors, and NGOs shape implementation unevenly across contexts. In Brazil and India, AI governance is hybrid, which means it is shared between federal and subnational governments, with private companies involved as well. In Nepal, AI governance is fragmented, which means it is dispersed across various actors and levels of governments, NGOs, and the private sector, and there is limited alignment across levels of government. On the other hand, AI governance in Ethiopia is very centralized, as the federal government leads

AI policy and strategies with limited local input and a small role of private companies in AI initiatives.

Three interrelated dimensions for classifying AI use

— FIGURE 05

1

Functional

WHAT AI DOES

Ranges from advisory and predictive tools to decision support, automation, and monitoring systems.

2

Sectoral

WHERE IT IS APPLIED

Links AI to development domains such as health care, agriculture, education, transport, and public administration.

3

Governance

WHO DRIVES ITS ADOPTION

Federal institutions set strategy, while subnational governments, private sector actors, and NGOs shape implementation unevenly.

Three AI governance models

— FIGURE 06

Centralized

ETHIOPIA

The federal government leads AI policy and strategies, with limited local input and a small role for private companies.

Hybrid

BRAZIL · INDIA

Shared between federal and subnational governments, with private companies involved as well.

Fragmented

NEPAL

Dispersed across levels of government, NGOs, and the private sector, with limited alignment across levels.

AUTHORITY CONCENTRATED

AUTHORITY DISPERSED

Similarly, based on the analysis in this report, Table 1 indicates that, sectorally, AI is most prominently used in banking and finance across all four countries, though primarily in the private sector. In the public sector, AI is used most prominently in health across all countries, but is expanding into urban planning at the pilot stage in Nepal and Ethiopia, and at a larger scale in India and Brazil.

Three-dimensional Typology of AI Governance

TABLE 01

TYPOLOGY	BRAZIL	INDIA	NEPAL	ETHIOPIA
Functional	 Advanced (decision support and automation)	 Intermediate (predictive tools and early scaling)	 Basic (advisory tools, analytics, and pilot projects)	 Basic (advisory tools, analytics, and pilot projects)
Sectoral	Public services and finance	Finance, welfare, agriculture, and health	Agriculture, health, urban planning, agriculture, disaster management, and public service delivery (pilot)	Urban planning and health (pilot)
Governance	Hybrid, active subnational governments, and active private sector	Hybrid, active subnational governments, and active private sector	Fragmented, NGOs- and private-led, and weak state coordination	Centralized (state-led) and weak private sector

To conclude, the findings offer only limited evidence for the expected benefits of federalism, especially in terms of innovation and experimentation. Federal systems can support AI development by fostering subnational innovation; however, in practice, this potential remains uneven. AI activities are concentrated in a few regions with limited diffusion, and as a result, AI contributes unevenly to development.

These findings highlight several areas for future research on AI, Federalism, and development. A key priority is to examine how variation in subnational capacity shape AI adoption. Further research should explore how different governance models, centralized and subnational driven, affect the use of AI in development sectors. There is also a need to better understand the role of private sectors. In depth, country specific detailed research can provide a clearer picture how AI is used in each context. The recommendations outlined in this report also offer guidance for the Forum of Federations to continue its work on AI and development and to support the countries focused in this study.

04

Opportunities and Challenges

All four countries—Brazil, India, Nepal, and Ethiopia—demonstrate varying levels of AI maturity. Yet, they face a set of shared and differentiated structural and institutional challenges and opportunities that shape AI adoption for development outcomes in federal arrangements.

In India, AI adoption is complicated by significant variation in state capacities. From a federal perspective, this reflects the asymmetry inherent in federal systems, as well as limited mechanisms for horizontal coordination and standard-setting. While the federal government promotes national AI strategies, states differ widely in their ability to operationalize them, leading to uneven implementation across regions. Brazil, although more institutionally consolidated, faces challenges due to low clarity in AI laws and strict copyright rules. The constitutional division of authority across federal, state, and municipal levels requires coordination across multiple jurisdictions and the private sector. For example, although the LGPD establishes a national data protection framework, its implementation and compliance responsibilities span multiple levels of government and involve both public institutions and private actors. At the same time, Brazil's copyright law sets relatively restrictive conditions on data use, affecting access for AI development. Together, these dynamics create coordination and compliance challenges across the multilevel government system.

Recent federalism in Nepal has introduced new governance layers, but AI adoption is constrained by limited capacity at the subnational level, which restricts the ability of provinces and local levels to scale initiatives beyond pilot stages. Similarly, Ethiopia, despite being a federal country, has highly centralized AI governance, which limits subnational ownership and private sector innovation. Regional government and a lack of technical capacity, whereas the private sector lacks freedom to invest, which leads to top-down initiatives that may not be adapted to the local needs.

While India and Brazil benefit from relatively stronger private-sector ecosystems and growing public digital infrastructure, they continue to face issues with data governance, ethical oversights, and scalable public-sector integration, which limit the transition from experimentation to a fully embedded AI-driven governance system. In contrast, Nepal and Ethiopia experience more constraints in their fundamental capacities, including limited digital infrastructure, a shortage of skilled personnel, a weak data ecosystem, and reliance on externally driven initiatives, largely restricted to pilot and advisory applications. Across all countries, concerns about data governance, ethical oversight, and accountability are important.

However, significant opportunities for AI adoption emerge not only from the ongoing digital transformation and the expanding innovation ecosystem in these countries, but also from multilevel governance structures that enable localized innovation. In India, despite uneven state capacities, the federal structure allows leading states to act as innovation hubs, that is promoting an active private sector and enable government support for AI-focused start-ups, thereby creating a strong potential for AI-enabled services. Brazil's relatively consolidated institutions combined with subnational capacity, strong public private partnership, and a dynamic technological sector provide a strong foundation for scaling AI applications in public service delivery, particularly when regulatory clarity evolves through coordinated federal and subnational action, in parallel with innovation.

In Nepal, although structural constraints are prominent, federalization creates opportunities to align national strategies with local needs, especially through pilot programs. Moreover, the early nature of digital transformation presents opportunities in targeted investment in foundational infrastructure, skills development, and externally supported pilot programs, which can enable rapid adoption of context-specific AI solutions. In Ethiopia, AI governance is relatively centralized, and opportunities lie in strong state-led coordination, which can enable rapid deployment of AI initiatives aligned with national priorities. However, limited subnational autonomy and the constrained role of the private sector may reduce local adaptability and the long-term sustainability of AI initiatives.

“ *The country analysis underscores the importance of striking a balance between coordination and flexibility to support AI development and deployment in federal systems.* ”

— OPPORTUNITIES AND CHALLENGES

Beyond these country-specific dynamics, across all four countries, a set of cross cutting opportunities is emerging. In particular, expanding data availability, increasing the quality of available data, and investing in “small AI” can create further opportunities for more focused development-oriented AI use in development sectors.

Challenges and opportunities at a glance

— FIGURE 07

	CHALLENGES	OPPORTUNITIES
Brazil	Low clarity in AI laws and strict copyright rules; coordination across multiple jurisdictions and the private sector	Consolidated institutions, subnational capacity, strong public–private partnership, and a dynamic technology sector
India	Significant variation in state capacities; limited mechanisms for horizontal coordination and standard-setting	Leading states act as innovation hubs, with an active private sector and government support for AI start-ups
Nepal	Limited subnational capacity restricts scaling beyond pilot stages	Federalization helps align national strategies with local needs; targeted investment in foundations
Ethiopia	Highly centralized AI governance limits subnational ownership and private-sector innovation	Strong state-led coordination can enable rapid deployment aligned with national priorities
All four	Data governance, ethical oversight, and accountability	Expanding data availability and quality, and investing in “small AI”

Taken together, these findings suggest that federal governance structures shape AI adoption through distinct but interconnected dynamics. First, variation in subnational capacity creates uneven implementation but also enables localized innovation and experimentation. Second, multi-level governance introduces coordination challenges, particularly in areas such as data governance, regulatory alignment, and public-private collaboration. Third, the federal system provides opportunities for policy learning and diffusion across subnational units. At the same time, cases with more centralized governance highlight that while coordination can be achieved more rapidly, the absence of subnational autonomy may limit contextual adaptation and long-term sustainability. Overall, these patterns underscore the importance of striking a balance between coordination and flexibility in federal systems that support AI development.

THREE FEDERAL DYNAMICS SHAPING AI ADOPTION

1 Subnational capacity varies Creates uneven implementation, but also enables localized innovation and experimentation.	2 Multilevel governance Introduces coordination challenges in data governance, regulatory alignment, and public–private collaboration.	3 The federal system Provides opportunities for policy learning and diffusion across subnational units.
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05

Recommendations

The findings of this study lead to several recommendations for AI implementation in the development sector and for future research agenda on federalism, AI, and development.

Recommendations		OVERVIEW	
01	Assess AI readiness at every level of government	06	Create usable toolkits for subnational officials
02	Deepen country-specific and comparative research	07	Build decision-makers' AI capacity
03	Study subnational capacity asymmetries	08	Scale high-potential AI functions
04	Link government, private sector, and universities	09	Support multilevel coordination platforms
05	Facilitate subnational knowledge exchange	10	Adapt AI strategies to local conditions

- 01** **Assess AI readiness at every level of government.** Based on the report's findings of significant variation in AI-related capacities across and within federal levels, in the four countries under study, it is recommended to develop tools to assess "AI readiness" at different levels of government. These should capture key dimensions such as digital infrastructure, legal preparedness, data availability, data quality, availability of skills, human resources, etc. While existing frameworks (eg. IMF and Oxford's Insights) assess readiness at the national level, they do not capture subnational variation, and do not focus on federal structure. Addressing these gaps would support more targeted and context-specific AI policy and investment.

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- 02 Deepen country-specific and comparative research.** There is a need for more in-depth, country-specific studies for all four countries to better understand how AI is and can be deployed within federal systems. For example, in Nepal, future research could examine how the recently developed AI policy is interpreted and implemented by provincial and local governments, as well as the role of the private sector. In addition, comparative studies between countries with similar capacities (such as Brazil and India or Nepal and Ethiopia) can generate more detailed and context-sensitive insights.
-
- 03 Study subnational capacity asymmetries.** Future research should focus on the asymmetries of subnational capacities and their implications for equitable AI adoption. This includes analyzing coordination challenges across levels of government as well as the evolving role of private actors and development partners in shaping the AI ecosystem, particularly in Nepal and Ethiopia.
-
- 04 Link government, private sector, and universities.** There is a strong need for government collaborations with private-sector actors and universities to ensure that ongoing AI innovations align with needs of the public sector, especially in Nepal and Ethiopia.
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- 05 Facilitate subnational knowledge exchange.** Subnational knowledge exchange between federal, state, and local governments should be facilitated, where participants from countries like Brazil and India can share practical experiences with lower-capacity systems such as Nepal and Ethiopia. The focus should be on practical, implementation-oriented knowledge, including how to manage and share data across levels of government, coordinate with federal agencies, engage the private sector, and deploy AI tools in different thematic sectors. In terms of format, small, focused sessions built around concrete case examples (e.g., a state-level AI application or data system) are likely to be more effective. These could be complemented by short briefing notes and case summaries that participants can adapt to their own context. Such an exchange of knowledge through a workshop would make AI adoption more feasible and sustainable.
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- 06 Create usable toolkits for subnational officials.** Simple, usable toolkits for information booklets tailored to different regions across countries should be created to help subnational officials apply AI in areas like agriculture, healthcare, and public administration, and move beyond existing pilot projects.
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- 07 Build decision-makers' AI capacity.** To support effective AI adoption, it is essential to invest in increasing AI awareness and decision-making capacities. Developing practical toolkits and targeted training programs for senior decision makers can help guide informed investment and policy choices. These training sessions should prioritize practical decision-making scenarios over technical details, enabling policymakers to evaluate trade-offs and align AI investments with institutional capacity and development priorities. This could include topics such as: i. understanding realistic use cases of AI in public service delivery ii. Assessing institutional readiness, including data availability, data quality, digital infrastructure, technical skills, and governance infrastructure at their respective level of government. iii. Manage risks related to data governance, ethical issues, and accountability iv. Designing an effective public-private partnership.
-
- 08 Scale high-potential AI functions.** In these four countries, several AI functions have strong potential to scale quickly, especially document processing for public service delivery in Brazil, predictive analytics for health planning across all four countries, and a decision support system to improve service delivery and administrative decision making in all contexts. These systems are built on existing data and pose relatively low implementation risk.
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- 09 Support multilevel coordination platforms.** Multilevel coordination platforms should be supported through organization of dialogues that bring together federal and subnational actors to improve alignment between national AI strategies and local implementation.
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- 10 Adapt AI strategies to local conditions.** Countries should be supported in adapting AI strategies to local conditions rather than applying a global or national one-size-fits-all model. This can enable local levels to experiment with AI on their local needs.
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Sample Interview Questions (Ethiopia)

- In practice, who primarily leads AI projects: the national government, regional or local authorities, or private companies?
- Are most AI initiative pilot projects led by private companies, or are government agencies implementing or scaling them?
- Where do you typically observe gaps between the National Artificial Intelligence Policy (2024) and the actual implementation of AI projects?
- What are the main challenges to scaling AI projects, such as infrastructure, AI skills, funding, interoperability, or data access?
- Are AI projects primarily concentrated in cities like Addis Ababa, or are they also being implemented in other regions?
- Which sectors, such as health, agriculture, urban planning, or education, are most actively using AI in Ethiopia? Are there notable cases demonstrating an impact on the development sector?
- How would you assess Ethiopia's Progress in adopting responsible and ethical AI practices?
- Are there government funding mechanisms or programs that support AI projects?
- What role do private companies and startups play in advancing AI innovation in Ethiopia?
- Based on your experience advising the government, what policy or institutional changes would facilitate greater AI adoption and impact?
- What are your key recommendations to **improve AI adoption, implementation, and impact in Ethiopia** across government, the private sector, and development programs?
- In your experience, what are the main **types or functions used in AI projects in Ethiopia**?
- For example, are AI projects used for:
 - **Service delivery** (e.g., automating citizen services, healthcare diagnostics)
 - **Decision-making support** (e.g., advising policymakers, resource allocation)
 - **Policy planning or forecasting** (e.g., predicting development trends, budgeting)
 - **Monitoring and evaluation** (e.g., tracking program outcomes, compliance)
 - **Data management and analytics** (e.g., collecting, cleaning, or analyzing large datasets)

- **Public engagement or communication** (e.g., chatbots, information campaigns)
- **Infrastructure management** (e.g., smart city systems, energy, or transport optimization)

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